November 1951

IN THIS ISSUE

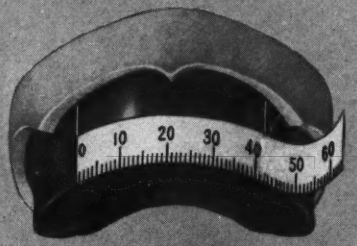
Cover illustration—Schaefer article, pages 496-501

...suggested procedure for simplified tooth selection

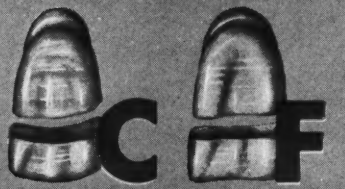
1 ***On the wax bite rim, inscribe the position of the central axis of each cuspid.***

One of the popular procedures followed for these guide lines is to place a straight edge at the alae of the nose and parallel to the central axis of the nose. This line continued to bite block will in 75% to 80% of general cases correspond to the central axes of cuspids.

A. The millimeter measurement taken between the inscribed lines will correspond invariably to the numeral identification of the proper Five-Phase Anterior mold.



2 **The length of the upper anteriors is the measure of distance between the edge of the wax bite rim and high lip line.**



3 **Dominant labial character (Curved or Flat) may be obtained from pre-edentulous records or if none exists, the dominant labial characteristics of near blood-relatives will serve as a guide.**

Because of the co-ordinate size system and the co-acting proximals of Five-Phase Anteriors, you can quickly select any combination of flat or curved centrals, laterals and cuspids to create personalized dentures for your patients.

WIDTH OF 6s CARDED FLAT	36 MM	39 MM	40 MM	42 MM	43 MM	45 MM	46 MM	48 MM	51 MM
LONG	L36/C	L39/C L39/F		L42/C L42/F		L45/C L45/F		L48/C L48/F	L51/C
MEDIUM	M36/C	M39/C M39/F	M40/C M40/F	M42/C M42/F	M43/C M43/F	M45/C M45/F	M46/C M46/F	M48/C M48/F	M51/C
SHORT		S39/C S39/F	S40/C S40/F	S42/C S42/F	S43/C S43/F	S45/C S45/F	S46/C S46/F	S48/C S48/F	
WIDTH OF 6s SET-UP	40.0 MM	44.0 MM	44.5 MM	47.0 MM	48.0 MM	50.0 MM	51.0 MM	54.0 MM	59.0 MM

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About Our CONTRIBUTORS

HARRY L. PAGE discusses in the current issue the first requirement in the articulating of teeth, MAXILLOMANDIBULAR TERMINAL RELATIONSHIPS.

WILLIAM I. OGUS, D.D.S. (George Washington University, 1917) is an oral surgeon who has been a contributor to DENTAL DIGEST since 1941.

JOSEPH E. SCHAEFER, M.D., D.D.S., an oral surgeon with a distinguished reputation is well known to DIGEST readers for his many articles on various aspects of his special field. Doctor Schaefer, collaborating with Ira Tresley, M.D., presents in this issue the first of a two-part discussion of cancer of the mouth.

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MAXILLOMANDIBULAR

Terminal Relationships

HARRY L. PAGE, Valparaiso, Indiana

DIGEST

The first requirement in the articulating of teeth is the establishment of the patient's exact maxillomandibular terminal relationships. The second, equally important, is the transference of these precise relationships intact to an articulating device capable of receiving and utilizing them. Dentistry acknowledges both requirements. There is, however, much confusion as to what constitutes exact maxillomandibular relationships, what determines a correct transfer and a proper instrument.

The principles of finding true head relationships and of duplicating them in usable form in an instrument are discussed in this article. These static positions are the origin of and the terminal for all jaw movements that comprise articulation. They must, therefore, be located and duplicated perfectly.

Routine Procedures

In ninety-five out of a hundred dental offices it is daily routine to attempt to reproduce maxillomandibular terminal relationships by apposing two bite-blocks in the mouth. When the apposition appears satisfactory the rims are luted together and transferred to some orthodox type of articulator.

Centric Ineffective—In some cases a gothic arch tracing and face-bow are used. Neither do any harm nor the slightest good. The entire operation, known as taking and mounting a centric bite, results only in apposing two objects in space. Centric bites are worthless the instant the apposition or the surfaces are altered.

Vulnerable to Occlusal Surface Changes—It is universally recognized that any oppositional change such as varying the vertical dimension will be disastrous and the technician is admonished continually not to "open the bite." What is not known is that *centric and the vertical may be maintained perfectly yet produce failure if there be any change in the type of occlusal surface.*

Cause of Flat Teeth—Where a centric bite is used the mere change from bite-blocks to cusp teeth will be ruinous. This explains why so many techniques resort to flat teeth. A centric bite demands the same, uncomplicated, bite-block type of surface with which the case was started.

Centric Bite and Mounting

Centric is defined as "The most retruded position of the condyles in their fossae from which movement is possible." Being a position, centric is static. If we disregard the meniscus, centric position might be said to be that point on the fossa against which the condyle sets itself and pivots in final closure.

Centric a Fixed Position—The fossa is part of the immobile skull. This means that centric is a fixed point on a fixed body. It is important to remember this. It may be done easily by keeping in mind the word combination, "fixed point, fixed body."

Centric Differs from Centric Relation—Almost all dental literature defines centric relation exactly as it does centric. This cannot be possible. Centric is a single condition. A relationship requires at least two bodies. If an object has a relationship to another object it cannot be to itself. Centric relation, then, is the relationship of a gross body, the condyle, or any point thereon to the centric position on the fossa. Every physical point on the condyle moves as the condyle moves.

Centric Relation—Any point in or on the condyle may represent centric relation. This point arcs as the condyle pivots and glides with the condyle as the latter moves in translational motion. Centric relation, then, is a moving point on a moving body. Another word combination to be remembered may be added; namely, "moving point, moving body."

Points Impossible to Locate and Utilize—In the class of mechanism represented by the temporomandibular joint it is impossible to locate, and equally impossible to utilize (1) a fixed point on a fixed body, or (2) a moving point on a moving body. Were the problem one of setting up a system of revolving shafts and pulleys, no one would attempt to locate the centers of motion on the stationary bearings in which the shafts revolve, bearings that correspond to centric on the fossa. Nor would one consider trying to use the surfaces of the shafts that revolve within those bearings, surfaces that correspond to

centric relation in or on the condyle.

Fixed Centers in Moving Bodies—Standard practice would locate and utilize the theoretical axal centers of the revolving shafts. These are *fixed centers in moving bodies* that can be located readily and used as sources of motion and centers of measurement. Hence, while we cannot locate or utilize points on mechanisms covered by the word combinations, "fixed point, fixed body," or "moving point, moving body," we can locate and utilize points on such mechanisms when covered by the word combination, "fixed point, moving body."

Moving Part of Joint—The condyle is the moving part of the joint mechanism. Hence, the first terminal in the maxillomandibular terminal relationships must be a fixed axal center of the condyle.

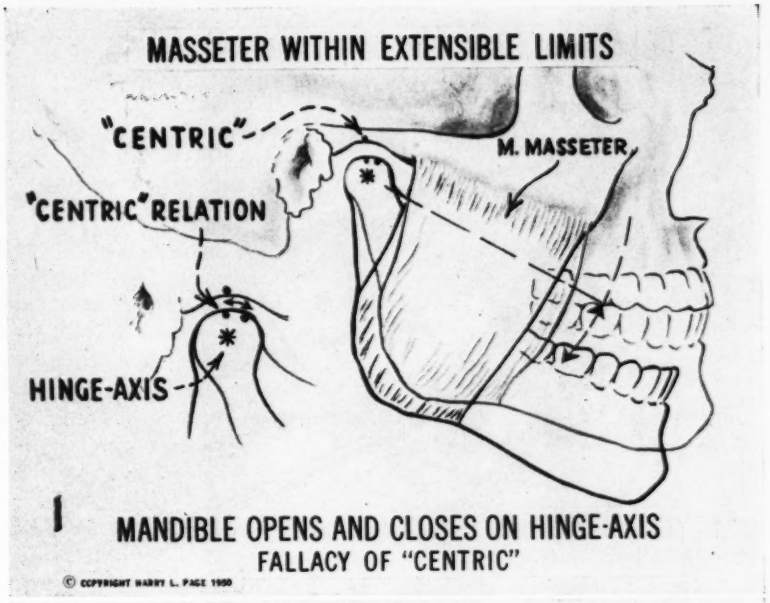
Axal Center can be Located—That it is feasible to locate the axal center or hinge-axis of the condyle has been demonstrated for many years. Any comprehensive writing on articulation that is sound will include a discussion of this fact.

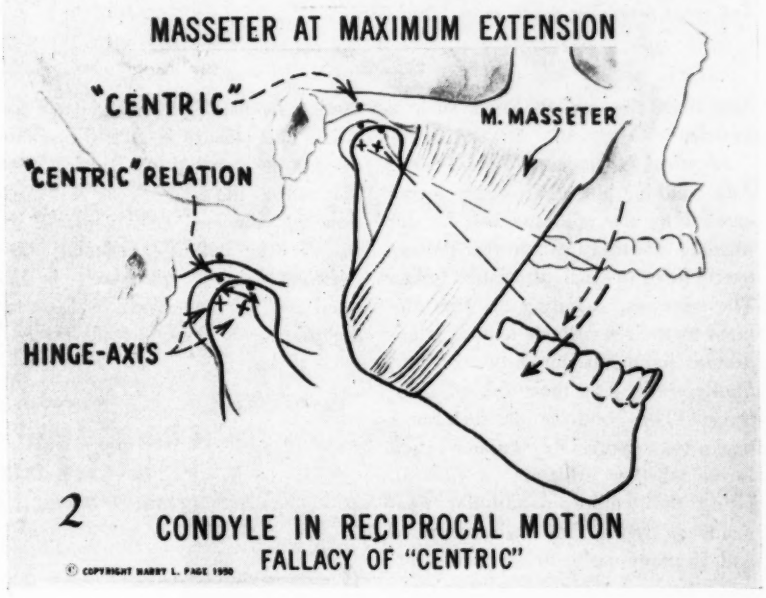
Figures 1 *and* 2—The existence and limitations of a hinge-axis are shown. Let us assume that the patient's hinge-axes have been located and visibly recorded (Fig. 3). Although this is vitally important, there is still a long step to complete the exact maxillomandibular terminal relationships.

Definitions

Hinge Position—In order to obtain the patient's hinge-axes, it is required that his condyles be located precisely in their fulcral or hinge positions. The hinge position is defined as "That position of the condyle in its fossa that permits location of a hinge-axis." Since there is only one condyle position in the patient's head that will permit location of a hinge-axis, this definition is necessary and sufficient.

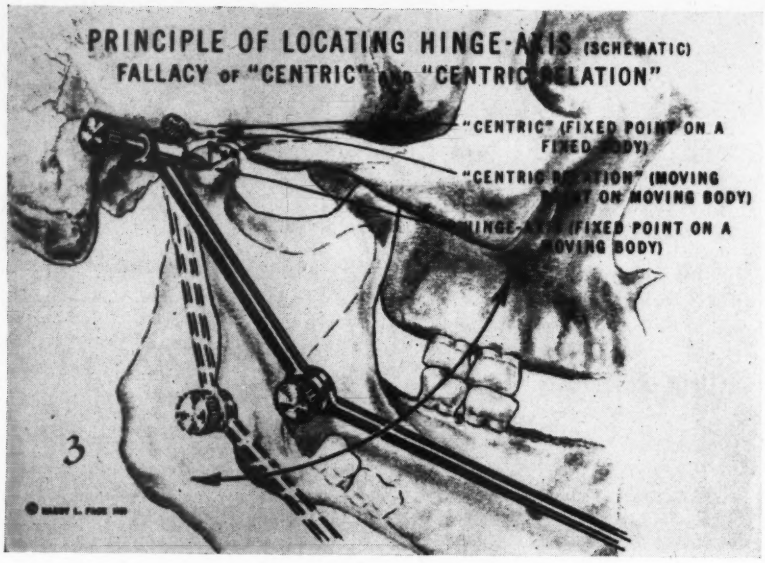
Voluntary and Involuntary Hinge Position—Many dentulous patients with reasonable articulation can draw their mandibles back to the hinge position voluntarily. The edentulous patient is rarely able to do so. His jaw must be forced back by the operator. This use of force is quite proper although it appears unnatural to the uninitiated and may incite objections from the patient. Nature has assigned no muscle to the sole task of retruding the mandible. Only a few fibres of the temporal make so much as an indifferent attempt to do so.





1. ***When the mandible opening does not exceed the relaxation limit of the masseter muscle, the condyle can rotate around its hinge-axis as an axal center. Roles of centric, centric relation, and hinge-axis are localized at lower left.***

2. ***When the mandible opening exceeds the relaxation limit of the masseter muscle, reciprocal motion must supplement rotational motion. This permits the masseter to maintain constant length as the jaw opens wide, thus saving bone and muscle from destruction. Roles of centric, centric relation, and the hinge-axis are localized at lower left.***



3. ***The adjustable hinge bow is fastened rigidly to the mandible. In hinge position the patient's jaw opens and closes rhythmically within hinge range. The hinge bow is adjusted until the pin shows no arcing as at "centric relation" but spins over one point as at "hinge-axis."***

Nor does the patient need such a muscle.

Identical Movement of Condyles—Any combination of arbitrary forces exerted by the operator will be duplicated naturally when the patient exerts force to crush a resistant bolus. The condyles, swinging on arcs dictated by their respective temporomandibular ligaments, move toward, and finally settle into their fulcral positions. (The condyles do not move backward appreciably under such forces whether arbitrary or natural. Using the temporomandibular ligaments as radii, they swing upward and, in many cases, finally swing *forward* to meet their fulcral positions on the anterior slope of the mandibular fossae.)

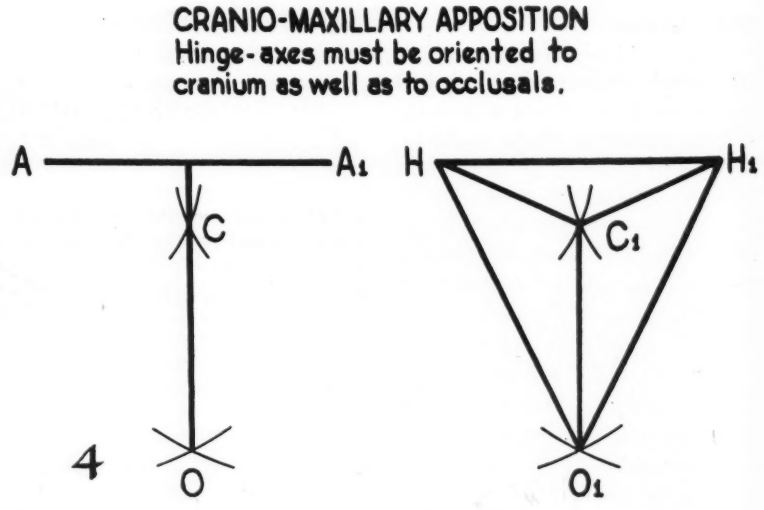
Physiologic Rest is not Hinge Position—When the patient relaxes from the hinge position to the so-called "physiologic rest position," it is often found that the latter is *behind* the hinge position. In all cases, the physiologic rest position lies *below* the hinge position. This would indicate that the physiologic rest position results when the temporomandibular ligaments are released from tension. This refutes the theory that motion from the physiologic rest position into closure is pure hinge motion. It is translational motion. For that reason the physiologic rest position is valueless as an *origin* in studying or building articulation.

Hinge-Axis—A hinge-axis is defined as "A theoretical axal center that pierces a condyle transversely." Every patient has two; one in each condyle. It should be noted (1) that these are axal centers, not point centers, and (2) that each is independent of the other. They are never placed symmetrically. One will be higher or lower than, or posterior or anterior, to its mate. There will be as many combinations of this asymmetry as there are people in the universe.

Hinge Bite—A hinge bite is defined as "The relationship of properly oriented bite-blocks or wax bites to the hinge-axes." This means that the bite-blocks or the wax bite have been arranged so that the occlusals are in correct radial relationship to one another and to the hinge-axes whether they are in contact, as in the case of bite-blocks, or separated by the wax bite, as in the case of teeth.

Coordinating Point Necessary

So far, we have the hinge-axes located and precisely related to occlusals that are, likewise, related to each other. Although this would be considered far more than is necessary for an orthodox mounting, the situation is still short of even reasonable science. As in any similar geometrical calculation, it is necessary to establish a third, a coordinating point. To illustrate the need for such a coordinating point, a simple geometric



4. ***Left: exact perpendicular bisector requires coordinating point C. Right: exact maxillomandibular terminal relationships require coordinating point C_1.***

problem where it is required to erect a perpendicular bisector to a given line may be considered.

Illustration—Using the ends of the line as centers and any radius that carries past the line's midpoint, scribe two short arcs intersecting at 0 (Fig. 4, left). The circumstance is now similar to our present status toward establishing the maxillomandibular terminal relationships. In both cases, two things have been correctly related to each other. But there must be a coordinating point for the two relationships already obtained if the exact perpendicular bisector of the line is to be found. The same applies to the maxillomandibular terminal relationships if they are to be exact.

Problem Solved—Take any arbitrary radius and again using the line ends as centers, scribe two more arcs intersecting at C. A line drawn through O and C and continued to the original line will be the perpendicular bisector required. The problem is solved. By choosing any arbitrary reference or coordinating point on the cranium that may be convenient, the problem of the exact maxillomandibular terminal relationships can also be solved. Let the point chosen be C_1 (Fig. 4, right).

Hinge Relation—The hinge relation is defined as "The relationship of any convenient cranial reference point to the hinge-axis." With the introduction of the hinge relation a series of theoretical triangles, all interconnected, have been established in the head. This becomes apparent by drawing the lines HO_1 H_1O_1, HC_1, H_1C_1, and C_1O_1. H and H_1 represent the patient's hinge-axes. O_1 represents the occlusals as a unit. C_1 represents the cranial reference or coordinating point. Now, the occlusals may be mounted in an articulator in a relationship identical with the one they occupy in the head.

Method—1. Using suitable instrumentation (a hinge bow and cranial reference indicator that are properly related and locked to a hinge bite), the articulator hinge-axes are adjusted so that the distances, HO_1 and H_1O_1 are the same as in the head.

2. The articulator hinge-axes are related to the cranial reference or coordinating point by stopping the upper arm of the instrument at a point corresponding to the same point of coordination, C_1, established on the cranium. This preserves the dimensions, HC_1, H_1C_1, and C_1O_1.

3. With the occlusals connected to the articulator arms, the theoretical triangles in the instrument will be congruent with the corresponding theoretical triangles in the head.

Hinge Occlusion—When the wax bite or bite fork are removed, teeth, natural or artificial, will appose each other, or may be set up to appose each other in hinge occlusion. Hinge occlusion is defined as "The relationship of naturally occluded teeth to the hinge relation."

Conclusion

This article does not attempt to do more than cover the *principles* of finding head relationships and mounting them properly in a suitable instrument. Maxillomandibular terminal relationships are static, whereas articulation involves kinematics as well. However, the kinematics of articulation in any instrument will have no value and will only accentuate an error unless they start from static positions constituting points of departure that are correct radially. Without precise points of departure, there can never be any worthwhile destinations.

104 *Garfield Avenue.*

Prevalence of Malocclusion in Children

MAURY MASSLER, D.D.S., M.S., and JOHN M. FRANKEL, D.D.S., M.S., Chicago, Ill.

Summary and Conclusion

The etiology and treatment of malocclusions have often been studied by clinicians; the epidemiologic aspects of the problem, only seldom. A simple quantitative method of assessing malocclusion for epidemiologic purposes is suggested. The method is based on the simple thesis of counting the number of maloccluded teeth in each subject. This study was undertaken to test the usefulness of this method and to accumulate epidemiologic data on the prevalence of malocclusion in a group of 2,758 children 14 to 18 years of age.

It was found that:

1. Almost 80 percent of the children had malocclusions of the teeth which required correction. Only 3 per cent had "ideal" occlusion, while 18 per cent had fewer than 10 extremely mildly malposed teeth which did not require orthodontic correction ("normal" occlusion).

2. The arithmetical mean for the group was 10.5 maloccluded teeth per child, with, however, a very large standard deviation. Almost the same number of children showed from zero to 20 maloccluded teeth.

3. There was no striking difference between boys and girls in the number of maloccluded teeth.

4. The number of persons with maloccluded teeth did not change appreciably from the fourteenth to the eighteenth year.

5. The lower incisors were the most frequently maloccluded and the upper first molars the least often affected teeth in the arches.

6. Bilateral symmetry in the number of maloccluded teeth was frequent. Teeth in the lower jaw were more frequently maloccluded than in the upper jaw.

7. The distribution of malocclusions according to Angle's classification was consistent with other studies.

From *American Journal of Orthodontics* **37**:767-768 (October) 1951.

ELECTROSURGERY

for Elevation of Frenum

to Aid Orthodontic Treatment

WILLIAM I. OGUS, D.D.S., Washington, D.C.

DIGEST

The use of an electrode in the case described in this article rather than a scalpel simplified the surgical procedure used to section the frenum for correction of a wide separation of the upper central incisors.

History

The patient, age 14, presented wide separation of the upper central incisors. The frenum extended through the median line to the lingual surface of the palate. The patient's deciduous anterior upper teeth were also separated. The patient was referred by the orthodontist for surgery of the frenum.

Surgery

1. The patient was draped and the area of operation was cleansed and sterilized (Fig. 1).

2. Injection was made of two per cent procaine on both sides of the frenum labially with four or five drops on the lingual surface. Surgery was begun after waiting about five minutes.

3. The labial frenum was grasped with a hemostat (Fig. 2). An electrode was touched to the hemostat while the current was on and the frenum was sloughed to the height desired. Figure 3 shows the appearance after the labial section of the frenum was completed.

4. The same electrode was applied directly to the frenum muscle in the median line and palatal area and sloughed off, completing surgery, as shown in Figure 4. Figure 5 shows appearance three days later during healing process.

Treatment

1. A daily mouthwash and irrigation were used routinely.

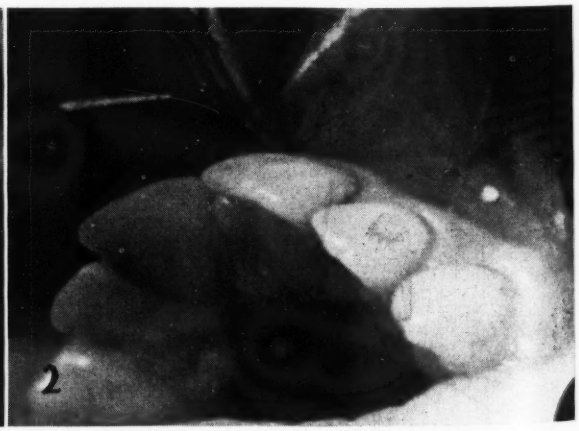
2. The slough was kept moist by application of dye, methylene blue, acriviolet, vaseline, or cocoa butter. There were no postoperative complications and the patient was returned to the orthodontist to proceed with treatment after one month. Illustration 6 shows the completed case one month later.

Conclusion

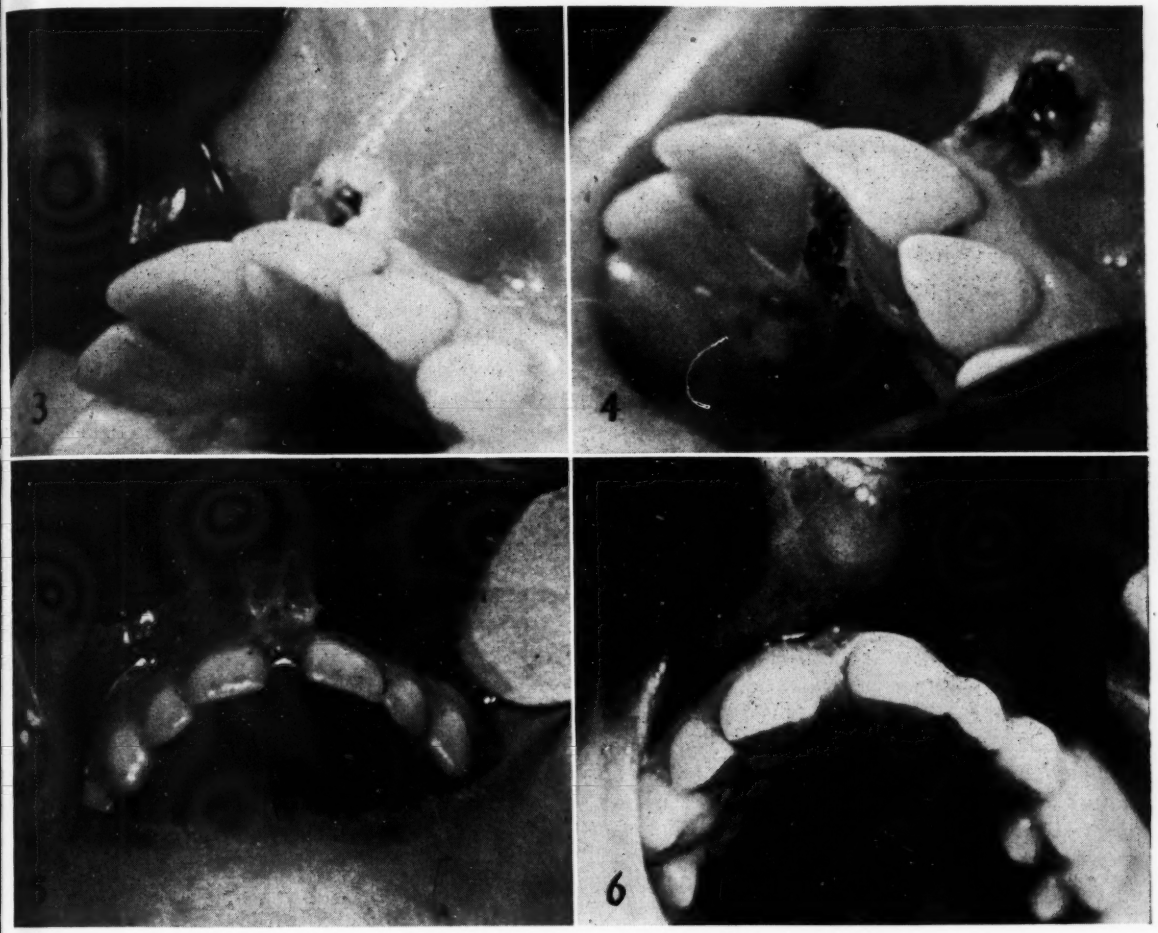
This surgical procedure is simpler than that performed by scalpel for the following reasons: (1) sutures are eliminated, (2) bleeding is controlled, and (3) infection is eliminated.

1832 *Eye Street, N.W.*

1. *Preoperative view of separation.*



2. *Application of current through hemostat, creating slough of frenum.*



3. *Appearance following surgery.*
4. *Appearance following coagulation of interproximal tissue.*
5. *Appearance three days later.*
6. *Appearance one month later. Healing completed.*

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Discussion of CANCER *of the Mouth*

Part I

JOSEPH E. SCHAEFER, D.D.S., M.D., and IRA TRESLEY, M.D., Chicago

DIGEST

Cancer is the second most common cause of death in the United States, outranked only by the cardiovascular diseases. It is of vital importance that all those who come in contact with this disease should be intelligently informed, and educated to recognize malignant lesions easily. The dentist has an important part to play in cancer control. Many lives may be saved by his alertness in the detection of early lesions.

This article reviews theories of the origin of cancer, illustrates typical lesions of the face and mouth, methods of treatment in specific cases, and the results of plastic repair and the use of prosthetic appliances for rehabilitation when the cancer has been controlled by destruction methods.

Detection in the Dental Office

It has been stated that 60 per cent of cancer of the mouth passes through the dental office unrecognized. Whether the accuracy of this figure can be supported or not, the dentist is not the only one guilty of this malfeasance; the physician is often equally guilty.

Examples—A man in his late fifties was referred by a dentist for an x-ray of the right lower third molar region to determine if a root was present in the bone to account for an overlying lesion of the soft tissues. The consultants instantly recognized the ulcer typical of a cancerous lesion.

Biopsy: The dentist was advised of the diagnosis and a biopsy confirmed a squamous cell cancer. Because of the necessity of radium treatment the patient was informed of the diagnosis. He wondered why his physician had treated him for three months with mouthwashes, leading him to believe the lesion was healing under this treatment.

Three Months Unsuccessful Treatment: The physician referred the case to the dentist after three months' unsuccessful treatment believing the ulcer might be caused by the patient's denture. The dentist immediately recognized that the ulcer was not caused by the denture but thought a buried root might be the explanation.

Example of Early Detection—A patient was referred to us by a dentist who was suspicious of a small lesion about the size of a dime in the floor of the mouth, lying over the orfice of the left Wharton's duct. The dentist referred this case to a physician because of an area of leukoplakia.

Ulceration Superimposed: On close inspection, a suspicious ulceration was found superimposed on the leukoplakic area. The entire ulcer was excised for a biopsy which proved to be an extremely early squamous cell cancer. Following a positive diagnosis, the excised area was treated with radon seeds.

Early Recognition to be Commended: The dentist in this case is to be commended for quick recognition of a malignant growth in an early stage when it was controllable.

Carcinomas Always of Epithelial Origin

Epithelial cells have the function of covering or lining. Since skin is a covering tissue, cancer can arise from any skin surface. Mucous membrane is lining tissue; therefore, any place where it is found can be the seat of cancer.

Sites of Cancer—(1) The mouth, (2) the throat, (3) the gastrointestinal tract, (4) the vagina or the uterus, and (5) the nasal accessory sinuses are all cancer sites. The breast and other glands at first may seem a contradiction to the lining and covering statement, but within the ducts of the glands are epithelial cells.

Histology of Skin

A review of the histology of the skin is helpful in clarifying the concept of cancer:

A section of skin under the microscope is seen to be made up of epithelial cells piled on top of each other. Imagine a stone wall running over an uneven terrain; think of the stones of the wall as epithelial cells. The lower layer of the wall which rests on the ground may be called the basement membrane, which is made up of cuboidal-shaped stones.

Cells Change Shape—Examining the layers of the stone wall it is noted that passing upward the stones change their shape; they become broader and flatter. In the upper layer the stones become extremely thin.

Germinating Layer of Cells—Compare the lower layer of stones of the wall with the lower layer of cells of

the piece of skin examined under the microscope. These cells constitute the stratum germinativum epidermidis, or germinating layer. Constantly, through life, these cells are germinating. To make room for new cells they pass outward, change their shapes, and become squamous cells, finally lose their nuclei, and are shed, or cast off.

Continuous Function of Skin—This function of skin goes on through life. In biologic terms, these cells are not inert as the stones of a wall but are living entities carrying on the function of life. Having lost their nuclei, the cells have undergone death which must necessarily represent a profound change of their intercellular chemistry.

Behavior of Cells in Cancer

In cancer the epithelial cells cease to follow the simple law of growth of new cells, loss of the nuclei, and death; but a revolution takes place. The cells do not lose their nuclei but retain them and begin to multiply. They become "gangster" cells determined to destroy the life of the host.

Change of Intercellular Chemistry—The loss of nuclei of the epithelial cells represents some profound intracellular change in their chemistry. The change into cancer cells also must represent a change of intra and intercellular chemistry. If a cancer cell were as large as a hen's egg, the chemistry of which could be analyzed, investigation would quickly be on the way to learn something about the mystery of cancer cells. But cancer cells are microscopic (smaller than the point of the finest needle) and are not capable of being analyzed individually by present methods of chemistry. The attack on the problem of what caused cancer must therefore be made by indirect methods.

Problem of Heredity—Maude Slye of the University of Chicago who spent a lifetime investigating a tumor in mice comparable to cancer in man, and who chose mice because of their short life cycle and its bearing on the heredity problem, made the following statement:

1. Mice which in the wear and tear of life develop chronic dermatitis, live and die with chronic dermatitis and do not develop cancer.

2. When the offspring of mice whose forefathers had cancer are bred with these mice whose forefathers had chronic dermatitis, they now develop chronic dermatitis; but superimposed on this they also develop cancer.

Deduction from Observation—Maude Slye concluded that there were two factors in cancer: (1) external, and (2) internal, the internal factor being on an hereditary basis.

Discussion

If the findings of Maude Slye are correct, the hereditary factor is present at birth. If this is true there must be some kind of mechanism present at birth that is carried within the body economy which lies dormant, perhaps for years, because cancer is usually a disease of later life.

Periosteum Concerned with Growth—If there is such a mechanism carried within the body (1) where is it located, and (2) what is the nature of the mechanism? For speculative purposes let us consider the function of the periosteum. It is an accepted theory that the periosteum has to do with the growth and laying down of bone tissue; that is, converting soluble calcium and phosphorus present in the blood into an insoluble form in bone tissue. After obtaining full growth the periosteum becomes inactive but in case of a fall and a broken bone, even at sixty years of age, immediately the periosteum again becomes extremely active in the repair of the broken bone. Here we have a mechanism which may lie dormant for years and then become active.

Heredity Cancer Mechanism Possible—In speculating with the possibility of an hereditary cancer mechanism it is the author's belief that it is not likely to be (1) in the osseous structures, (2) in the muscular tissues, (3) in the tissues of the nervous system, or (4) in the blood vascular system. Knowledge of these tissues is fairly comprehensive; but how about the endocrine system of glands that deals with complex hormones which have so much to do with growth, sex, and emotional reactions?

Role of the Endocrine System—Is it possible to inherit endocrine glands which later in life cease to function properly, as the pancreas in diabetes? Is it possible that hormones might be supplied or withheld in some manner which would permit epithelial cells to become "gangster" cells?

Early Reasoning Supported—This speculation concerning the relation of the endocrine system to the formation of cancer occurred thirty years ago. It was therefore not surprising to learn that in cancer of the prostate removal of the testicles held the cancer in abeyance.

(See text for explanatory legends for each picture)

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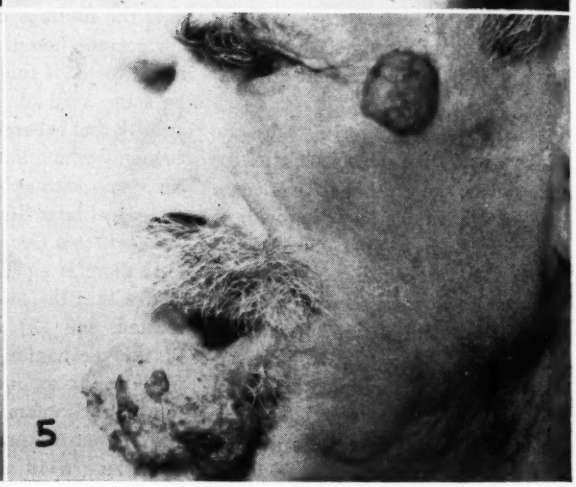

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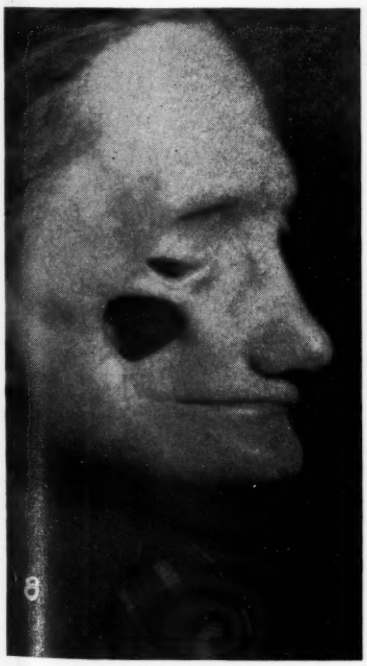
Theory—Estrogenic substances are now being used in the treatment of cancer. It is the author's opinion that the answer to what causes cancer will be found and the cure will be a biologic substance which, when injected, will stop the growth of cancer cells.

Present-Day Treatment

Twenty-five years ago V. P. Blair made the following statement: "There has been nothing new in the treatment of cancer for fifty years—early recognition and wide excision."

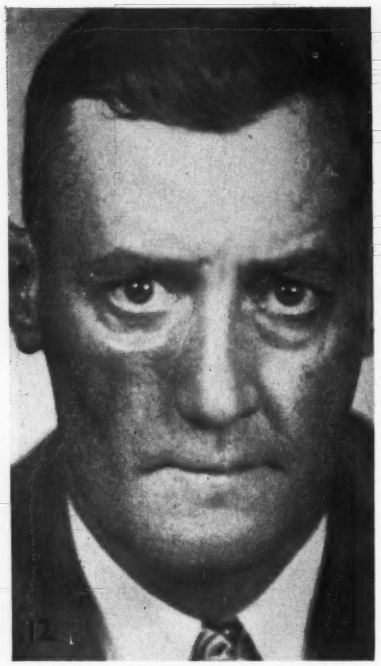
Cancer Control—With the exception of isotropes which are not used generally in the treatment of cancer, Blair's statement holds true today: Early recognition and wide excision or complete destruction are the factors in cancer treatment. No cancer is controlled unless *every cancer cell is removed or destroyed.*

Additional Instruments Used In Treatment—By complete destruction is meant, in addition to surgical excision, the use of x-ray therapy, radium, and radon implants, the actual cautery, heat coagulation by diathermy, and finally, chemotherapy, such agents as arsenic, trichloracetic acid and zinc chloride.



Types of Cancer

Figure 1—The earliest type of cancer of the lip. The patient had what looked like a cold sore with this difference in the history: A cold sore will form a crust and in about one



week's time the crust will fall off and the lesion heal. In a cancerous lesion the crust falls off and is replaced by another crust; in other words, the lesion does not heal. This is the time to prove the nature of the lesion.

Radon Seeds—Two radon seeds will control this type of cancer. Radon seeds are small gold tubes, about the thickness of the lead in a fine lead pencil and about one-eighth of an inch in length. These golden tubes contain radium emanation and each seed will destroy about a cubic centimeter of cancerous cells.

Figures 2, 3, 4, and 5—More advanced types of lesions. Figure 5 shows a patient with an advanced squamous cell lesion of the lip and a basal cell lesion on the side of the face.

Basal Cell Cancer—It was stated that the stratum germinativum contained the growing layer of the skin and the cells were cuboidal in shape. These are also called basal cells. Basal cell cancer is not of a high degree of malignancy and does not tend to metastasize; that is, it does not spread into the lymph channels. It can be extremely destructive locally, however. Much of the skin cancer is of the basal cell type.

Squamous Cell Cancer—The squamous cell type of cancer is much more malignant. There has been an attempt to appraise the degree of malignancy by a system of grading (Grades I, II, III, and IV). This grading is valuable and is based on the examination of the number of cancer cells and the number of mitotic figures in a given microscopic field.

Rapid Cell Division—It will be remembered that mitotic figures appear in cells when they are in the act of dividing to form two cells; hence, many mitotic figures mean rapid cell division and rapid growth.

Grade I: A borderline type where the malignancy of the specimen may be questionable.

Grades II and III: There is no question about the malignancy of the specimen and the formation of pearls are seen.

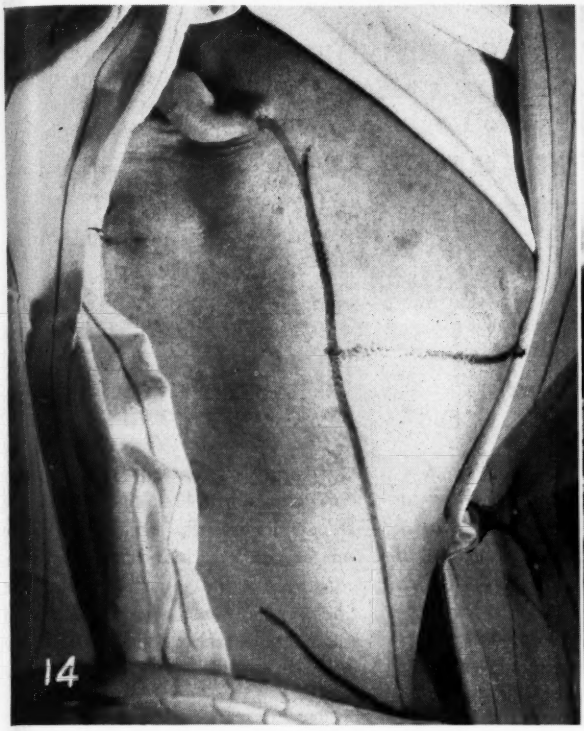
Grade IV: There is such a rapid growth of cells that it is described as being anaplastic which means literally without form. In other words, the cells appear to be undifferentiated; it is difficult to say whether the specimen is a carcinoma or a sarcoma. It is believed that Grade IV malignancy is uncontrollable.

Controlled and Uncontrolled Cancer

Figures 6, *and* 7—Cancer with its enormous destructiveness when it is uncontrollable. Attempts made to control this case failed completely either because the patient was seen too late or it was a Grade IV malignancy.

Figure 8—A controlled case of cancer of the maxillary sinus after twenty years. About twenty years ago the author was consulted by a physician who was treating this patient for an infection of the maxillary sinus.

Diagnosis: A breaking down of the



external walls of the sinus had occurred. The tissue present at the site appeared cancerous. This was substantiated by biopsy.

Treatment: The entire sinus with its contents was destroyed by a red hot soldering iron, followed by the use of a radium pack. Treatment resulted in the loss of the patient's eye and a facial defect. The patient refused plastic repair.

Cure: On examination twenty years later the original cancer site was as clean as a "whistle." This case can be considered a cure. The word "cure" in cancer is used with extreme conservatism. The rule is that the term "cure" is used only after a five-year period.

Meaning of Control—Control consists of destroying every cancer cell. This control may be accomplished by (1) wide surgical dissection of the cancerous lesion or a surgical dissection followed by deep x-ray therapy, (2) the use of radium or radon implanted in the original ulcer followed by deep x-ray therapy, and (3) the addition of a complete dissection of the cervical glands of the neck to prevent metastasis to the neck and lungs.

Technique of Cancer Control

Figure 9—The case of a patient with cancer of the buccal sulcus extending into the maxillary sinus. In order to treat this lesion satisfactorily, an incision was made through the upper lip following the side of the nose to the inner canthus of the eye. By this type of incision the maxilla can be explored and the lesion brought under proper visual inspection. After a wide dissection and the use of the hot soldering iron, the destroyed area was treated with contact x-ray.

Figure 10—The tube of the x-ray machine in place, radiating the destroyed cancer area.

Figure 11—The incised tissues sutured in place with little disfigurement.

Figure 12—The same patient six months later with little permanent facial disfigurement and with a controlled cancer. Periodic examination of the patient over the past two years reveals no recurrence.

Figure 13—A cancer in the lower buccal sulcus being treated with contact x-ray followed by a radical neck resection.

Figure 14—The incision lines traced on the neck with dye preparatory to the neck resection.

Figure 15—The completed neck resection. The carotid artery and the vagus nerve remain in situ. The internal jugular vein and all of the cervical glands have been removed. Following surgery, the patient received deep x-ray therapy to the neck.

(*To be concluded next month*)

804 *West 79th Street.*
25 *East Washington Street.*

FIVE YEARS OF FLUORIDE OPERATIONS

in Sheboygan, Wisconsin

A. H. FINKE, D.D.S. and G. J. HILDEBRAND, M.D., Sheboygan

DIGEST

This article is a brief history of the installation of fluoridation of public water supplies in Sheboygan, Wisconsin. Information concerning preliminary educational measures, description of instruments used, costs of the procedure, and a report of the results obtained over a five-year period are included.

Interest Stimulated by Published Surveys

Interest in the fluoride program came chiefly as a result of the survey conducted in 1942-1943 by the State Department of Public Health of the school children in Green Bay, Wisconsin, and the same age groups in Sheboygan. Green Bay is located in the fluoride area of the state and re-

Table 1

TYPICAL MONTHLY FLUORIDE APPLICATION RECORD REPORT.

FLUORIDE APPLICATION- Sheboygan, Wis. February 1947

Date	Gallons Treated (Add 000)	Sodium Fluoride Applied		Residual Fluorine (F) p.p.m							
		Pounds NaF	p.p.m. as F	Filter Effluent	Plant Tap 9 a.m.	Plant Tap 4 p.m.	Plant Tap 12 p.m.	Distribution System Location	p.p.m	Location	p.p.m.
1	5175	100	.99	.15	1.15	1.15	1.15	1516 So. 12th St.	.90	17th + Union Ave.	1.15
2	4085	78	.95	.15	1.15	1.15	1.15	—		—	
3	6229	123	1.00	.15	1.15	1.15	1.15	"	1.15	2027 N. 15th St.	1.15
4	6261	122	.99	.15	1.15	1.15	1.15	"	1.15	1502 Union Ave.	1.15
5	5690	111	1.00	.15	1.15	1.15	1.15	"	1.15	N. 8th + Lincoln	1.16
6	6442	126	1.00	.15	1.15	1.15	1.15	"	1.15	905 Swift Ave.	1.15
7	5496	108	1.00	.15	1.15	1.15	1.15	"	1.15	1725 N. 20th St	1.15
8	5053	96	.97	.15	1.15	1.15	1.15	"	1.15	South 12th St.	1.15
9	4134	80	.99	.15	1.15	1.15	1.15	—		—	
10	6221	123	1.01	.15	1.15	1.15	1.15	"	1.15	—	
11	6007	117	.99	.15	1.15	1.15	1.15	"	1.15	8th St. + Jefferson Ave.	1.15
12	5846	115	1.00	.15	1.15	1.15	1.15	—		—	
13	5702	110	.98	.10	1.15	1.15	1.15	"	1.15	2627 N. 15th St.	1.15
14	5764	112	.99	.15	1.15	1.15	1.20	"	1.15	908 Broadway	1.15
15	4951	96	.99	.15	1.15	1.15	1.15	"	1.20	2621 Calumet Drive	1.15
16	4425	85	.98	.15	1.15	1.15	1.15	—		—	
17	6082	118	.99	.15	1.15	1.15	1.15	"	1.15	1315 S. 11th St.	1.15
18	6084	118	.99	.15	1.15	1.15	1.15	"	1.15	1434 N. 15th St.	1.15
19	5874	115	1.00	.15	1.15	1.15	1.15	"	1.15	Washington School	1.15
20	5992	115	.98	.15	1.15	1.15		"	1.15	N. 21st St.	1.15
21	5546	108	.99	.15	1.15	1.15	1.15	"	1.15	S. 14th + Indiana Ave.	1.15
22	5194	101	.99	.15	1.15	1.15	1.20	—		—	
23	4730	93	1.00	.15	1.20	1.15	1.20	—		—	
24	5982	117	1.00	.15	1.20	1.15	1.15	"	1.15	S. 11th + Union Ave.	1.15
25	6286	121	.98	.10	1.20	1.20	1.20	"	1.20	N. 7th + Wisconsin Ave.	1.20
26	5880	113	.98	.15	1.20	1.15	1.15	"	1.20	C. + N.W.R.R. Roundhouse	1.20
27	6074	118	.99	.10	1.15	1.15	1.15	"	1.15	1840 N. 15th St	1.15
28	5824	112	.98	.15	1.15	1.15	1.15	"	1.15	S. 9th St. + Georgia Ave.	1.15
29											
30											
31											
Total	157038	3051	27.70	4.05	32.40	32.25	31.25		25.20		24.25
Av.	5608	109	.99	.144	1.157	1.151	1.157		1.145		1.158
Max.	6442	126	1.01	.15	1.20	1.20	1.20		1.20		1.20
Min.	4085	78	.95	.10	1.15	1.15	1.15		.90		1.15

WATER & SEWAGE WORKS, February, 1948

Table 2.

FLUORIDE APPLICATION SUMMARY
October 1, 1946 to September 30, 1947
Board of Water Commissioners, Sheboygan, Wis.

Month	Gallons of Water Treated	Sodium Fluoride Applied		Average Results of Tests for Fluorine, ppm.		
		Pounds NaF	ppm. as F	Untreated (1 ea. day)	Plant Tap (3 ea. day)	Dist. System (2 ea. day)
October, 1946	194,394,000	3359	.94	.16	1.06	1.04
November	169,700,000	3328	1.00	.16	1.13	1.14
December	171,844,000	3356	1.00	.15	1.11	1.13
January, 1947	172,956,000	3370	.99	.14	1.14	1.14
February	157,028,000	3051	.99	.14	1.15	1.15
March	174,788,000	3424	1.00	.15	1.16	1.16
April	174,857,000	3448	1.01	.14	1.16	1.16
May	186,612,000	3663	1.00	.14	1.15	1.16
June	192,233,000	3834	1.02	.16	1.17	1.16
July	226,150,000	4449	1.00	.15	1.17	1.17
August	253,671,000	4875	.98	.16	1.15	1.15
September	219,015,000	4123	.98	.15	1.15	1.15

ceives its water supply from deep wells which contain a natural fluoride content of about 2.3 p.p.m. Lake Michigan is the source of the water supply for Sheboygan and contains only a slight trace of fluoride.

The published report of the survey[1] showed that the school children in Sheboygan had 40 to 60 per cent more caries than the children in Green Bay.

Effects of Natural Fluoride Content

It had been known for many years that in certain areas of this and other countries drinking water containing natural fluoride caused mottling of the enamel when the fluoride content was too great. In many of these areas, however, the people had little or no caries in their teeth.

Tests made in several areas in Wisconsin demonstrated that water supplies containing natural fluoride in amounts from 1 to 1.5 p.p.m. resulted in little or no discoloration of the teeth. The caries rate in these areas, however, was no greater than in regions where the fluoride content was higher.

Preliminary Educational Measures

Shortly after the adoption of a resolution, April 1944, by the Wisconsin State Dental Society recommending that the state's "public water supplies deficient in fluoride raise their concentration up to 1 p.p.m. to inhibit tooth decay," the Department of Public Health in Sheboygan sought permission to begin fluoridation of its public water supply.

An ordinance to this effect was adopted by the City Council after a preliminary educational program had been carried out.

The State Department of Public Health had given permission to proceed with the Bureau of Sanitary Engineering advising and approving the methods of application and control. The State Department of Public Health also had given assurance of assistance in the survey and evaluation proceedings of the program.

Fluoridation Operation Instituted

Feeder Installed—An Omega Precision Gravimetric fluoride feeder was installed which fed dense white sodium fluoride (90 per cent NaF). This is a free flowing powder with little tendency to arch in the hopper and no tendency to absorb moisture and cake in storage. The equipment and installation cost was approximately $1500.00.

Cost of Operation—The sodium fluoride cost when operations began, February 25, 1946, was about $2.20 per million gallons of water treated. Roughly this amounted to ten cents per capita (population, 45,000) per year. Present-day costs, however, have increased with that of other commodities.

Method of Determination—The Scott-Sanchis method of fluoride determination is used (page 76, 9th edition of Standard Methods) which is dependable to .1 p.p.m. with six laboratory determinations made each day.

Reports Issued Monthly—Chemists attempt to read the tubes to one-half of this amount by interpolating standards and record results to .05 p.p.m. A fluoride application report is issued which shows the minimum and maximum averages for each monthly period.

Yearly Surveys Made—Surveys are made each year in the schools and the children of the senior kindergarten (age 5) are used for the study on deciduous teeth. The children of the 4th, 7th, 8th, and 9th grades are used for the study on permanent teeth.

Published Report

The following is the published report on the fluoridation operation since the beginning of the program:

[1]Bull. Francis A.: The Role of Fluoride in Dental Health, J.A.D.A. **30**:1206 (August) 1943.

TABLE 3
D. M. F. RATE
(Number of decayed, missing, and filled teeth per child)

	Deciduous Teeth	*Permanent Teeth*
Pre-fluoridation survey	4.80	8.45
1946	4.32	8.09
1947	4.09	7.27
1948	3.46	6.92
1949	2.90	7.00
1950	2.58	6.67

TABLE 4
(Percentage of children without caries)

	Deciduous Teeth	*Permanent Teeth*
Pre-fluoridation Survey	20.40	2.77
1946	26.92	2.61
1947	29.17	3.28
1948	32.40	3.20
1949	37.20	2.90
1950	43.20	4.20

Summary of Results

1. In five years of fluoride operation no trace of discoloration or mottling has shown on the teeth and no toxic conditions have been noted.

2. A somewhat higher luster or sparkle to the teeth is gradually appearing which adds considerably to the beauty of the enamel.

3. Recent surveys in young children show almost an entire absence of caries in the anterior teeth.

4. The program as a study is expected to continue for a period of fifteen or sixteen years in order that an estimate of the benefits of controlled fluoride application and its relation to caries in the teeth of a new generation may be made.

Department of Public Health.

Aphthous Stomatitis

The simple herpes simplex virus is believed to be responsible for aphthous stomatitis (aphthous ulcer or canker sores), herpes labialis (fever blisters and cold sores), and acute infectious gingivostomatitis. The size of the virus has been substantially established at about 150 millimicrons in diameter.

Approximately 70 to 90 per cent of adults exhibit a high titer of antibodies to the virus. These titers are demonstrable by neutralization or complement fixation tests.

It is believed by most workers that the virus enters the body early in childhood. It parasitizes the body cells for the remainder of life. As such, the immunologic mechanism appears to be of the "all or none" variety.

Clinically, aphthous ulcers are observable in two stages: (1) the vesicular, lasting for less than a day, and (2) the ulcerous, lasting ordinarily one to three weeks. Trauma, lowered resistance, febrile diseases, digestive disturbances, and certain foods have been variously incriminated as the exciting agent in certain instances.

A cyclic variety of aphthous stomatitis has been observed in many women. Less frequently an "allergenic agent", such as nuts, cheese, chocolate, caviar, or a barbiturate has been definitely incriminated as the exciting agent.

Considerable diagnostic skill and acumen is required in the differential diagnosis of the herpetic lesions from other affections which may simulate the usual clinical picture. Solitary oral ulcers occur both in children and adults. The predisposing factors may vary but generally the exciting cause is an abraded surface. Frequently the ulcers are large, some being the size of a quarter. Occasionally several ulcers may be seen to coalesce. The ulcer is crater-like or punched-out and exhibits a yellowish exudate. These ulcers are extremely painful. They may be accompanied by such secondary symptoms as regional lymphadenopathy and sialorrhea.

The so-called neurotrophic ulcers result from defective peripheral innervation incident to the performance of a peripheral mandibular nerve block. These ulcers appear one to two days after the injection. They are large, yellowish gray erosions and exhibit a fibrinous exudate. These ulcers are rather protracted (six to eight weeks). They may be anesthetic in the early stages but may become painful later and resolve by cicatrization.

The usual one to three-week course of the lesions with the normal advent of spontaneous resolution has directed therapy along the lines of affording symptomatic relief. Long-used favorite topical agents such as an 8 per cent zinc chloride solution, camphorated phenol, liquid phenol, alum, and the application of stick silver nitrate are still much in vogue.

Roentgen therapy offers little in the treatment. The use of a nonspecific and a specific virus vaccine has been beneficial in some patients. Others have been aided by the administration of the vitamin B complex. Of utmost importance is the ability to differentiate certain aphthae and labial herpetiform lesions from a closely simulating incipient squamous cell carcinoma.

Dietz, Victor H.: Etiology, Symptomatology, and Therapy of Aphthous Stomatitis, Mil. Surgeon **107**: 175-180 (*September*) 1950.

A BACK ACTION APPLIANCE

for Tooth Movement and Retention in Periodontics

ARTHUR B. ADELMAN, D.D.S., Brooklyn, New York

DIGEST

The drifting and spacing of the anterior teeth is a dental problem affecting people in their middle years. A satisfactory solution is difficult as there is usually severe alveolar atrophy and the drifting has accelerated by the time the patient becomes sufficiently aware of the condition to seek dental relief.

This article discusses a removable appliance that has been found satisfactory in bringing the teeth to position and serving as a retainer. A step-by-step outline is given for the procedure to be followed in constructing the appliance.

Problem of Treatment

In order to retain the teeth and improve the appearance of the mouth it is necessary to return the teeth to their original position of proximal contact. Treatment and retention can then be effective.

Helpful Measures in an Early Stage—The following measures would have been helpful in an earlier stage but are now of small value: (1) periodontal treatment, (2) occlusal equilibration, (3) ligation and splinting, (4) habit and diet correction, (5) psychotherapy.

Extraction and Prosthesis—A solution to the problem would seem to be extraction and prosthesis but for the fact that the patient is psychically unprepared to lose his teeth. The life situation and tensions in the patient that engendered the condition lead him to regard the loss of teeth as a symptom of age and deterioration.

Use of an Appliance

Some orthodontic means must be employed to reposition the teeth. A removable appliance used by the author has proved effective in bringing the teeth together quickly and then acting as a retaining agent.

Illustrations—Figure 1 shows views of the appliance on models at the beginning of treatment. Figure 5 is of models before treatment and of the same case after five months.

Description—Basically, the appliance combines the posterior solid support of continuous Bonwill clasps with an anterior back action labial arch to achieve guided movement of the anterior teeth.

Procedure

The steps in construction of the appliance are the following:

1. The models are surveyed and the outline of the continuous clasps indicated. Half round 14-gauge wax is used.

2. The continuous clasps are cast in gold and tried in the patient's mouth.

3. A round .036 labial arch wire is adapted to the anterior teeth near the neck of the teeth.

4. Two .040 by ¼-inch round tubes are placed in position and soldered to the clasps at the first bicuspid neck so that the labial arch can slide freely against the anterior teeth.

5. The end of the labial arch extends ½ inch posterior to each tube.

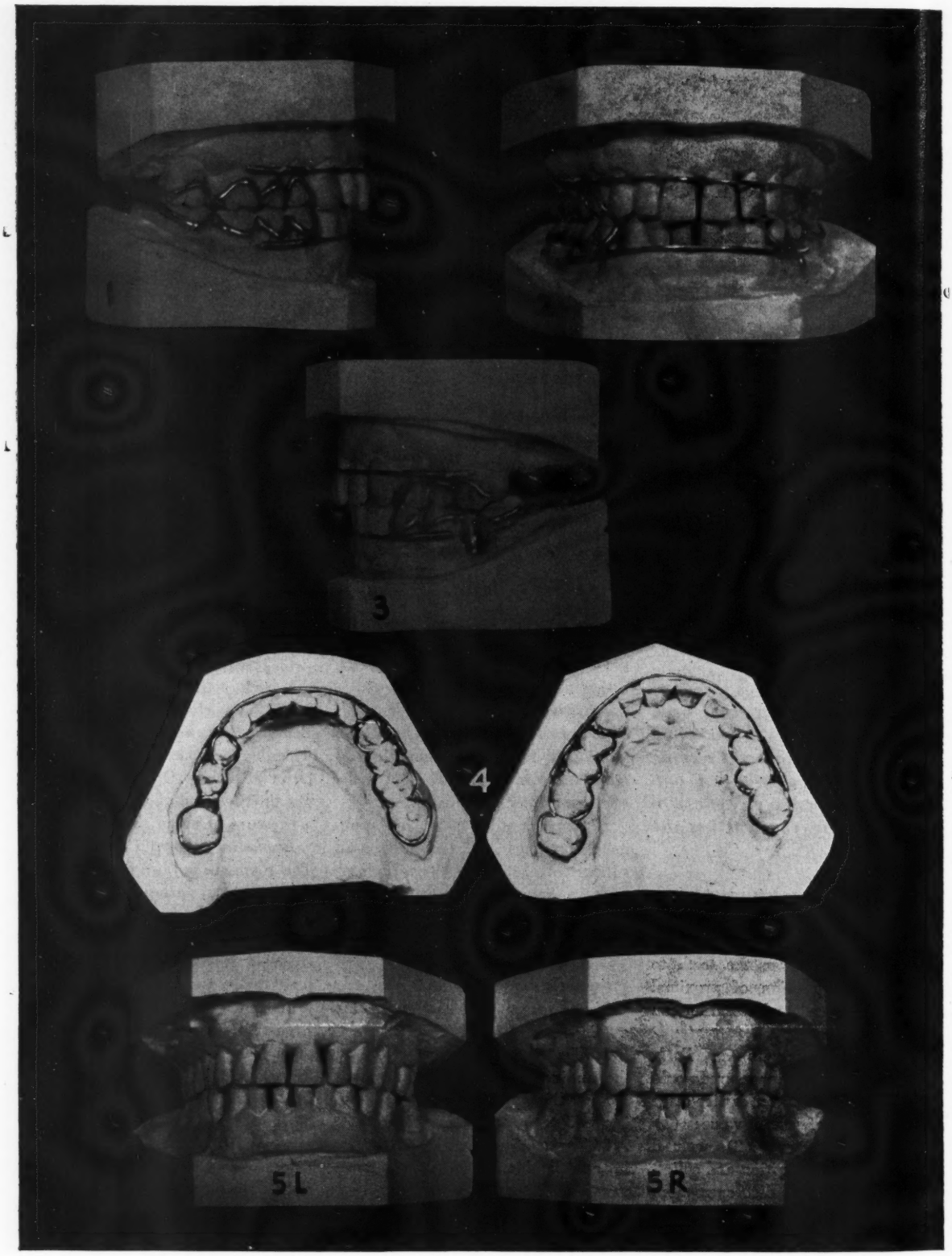
6. A ⅜-inch piece of closed .040 stainless steel coil spring is placed on each end of the arch wire in back of the tubes.

7. With the tubes and coil spring in a forward position on the arch, a drop of solder is placed at the ends of the arch wire to act as an end stop.

8. The controlling adjustment in the back action of the labial arch opens and closes the coil spring. Bending the arch allows for the widening or contracting of the posterior segments. Opening the spring one thirty-second of an inch will exert a pressure of about three ounces.

Appliance Worn Continuously—The appliance is worn for at least two weeks with no spring tension, so that the patient can become accustomed to it. It is worn continuously, being removed only when eating. After the breaking-in period the coil springs are opened so that the pressure is brought by the arch on the anterior teeth. The pressure is maintained during treatment and after the teeth are in coronal contact.

Appliance Used as Retainer—Coronal contact is usually quickly established by a tilting movement of the teeth. The continued pressure after coronal contact is accomplished completes the space closure by bodily movement of the teeth. Once the final position is established, the appliance, with the spring tension reduced, serves as a retainer.



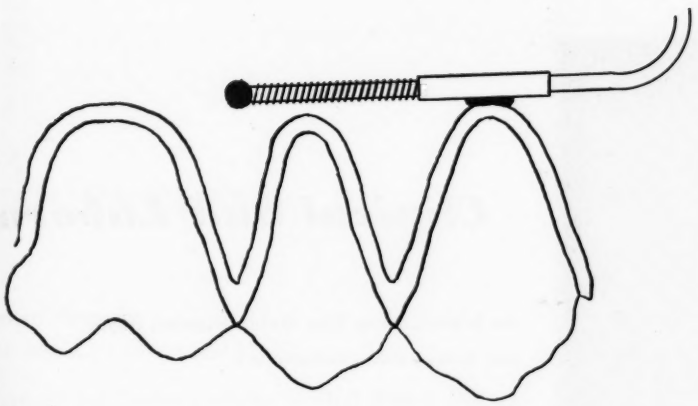
1. *Right side view of model.*

2. *Anterior view.*

3. *Left side view.*

4. *Occlusal view.*

5. *Left, model before treatment. Right, model after five months.*



6. ***Schematic drawing showing relation and assembly of arch wire, coil spring, soldered end stop and continuous clasp.***

Summary

The author considers the appliance described a valuable dental adjunct in the treatment of drifting teeth in the middle aged patient for the following reasons:

1. Drifted and spaced teeth can be moved safely to better functional and esthetic position.

2. The appliance is removable, affording comfort in eating and ease in social situations should they arise, and simplifying cleaning.

3. It is small, light, yet strong and positive in control.

4. It is effective in tooth movement and retention.

1201 *Cortelyou Road.*

Activity of Salivary Glands

THAT STIMULATION of the chorda tympani nerve causes a flow of saliva from the submaxillary gland has been known for a hundred years. Later it was shown that the salivary glands are affected by both the cervical sympathetic and the cerebral nerves.

Process of Stimulation

Not only are secretory fibers carried to the glands by these paths but vasomotor fibers are contained in the same nerves and the arrangement of the latter fibers is such that the cerebral nerves contain vasodilator fibers that cause a dilation of the small arteries in the glands and an accelerated blood-flow.

Vasoconstrictor Fibers—The sympathetic nerve carries vasoconstrictor fibers whose stimulation causes a constriction of the small arteries and a diminished blood-flow. If the chorda tympani nerve is stimulated by weak induction shocks, the gland begins to secrete promptly.

Increased Flow of Blood—At the same time there is an increased flow of blood through the gland. The whole gland takes on a redder hue, the veins are distended, and if cut, the blood that flows from them is of a redder color than in the resting gland and may show a distinct pulse.

Indications of Vasoconstriction—If the sympathetic fibers are stimulated, the secretion is (1) relatively small in amount, (2) flows slowly, (3) is thick and turbid, and (4) contains a higher percentage of solids. The gland becomes pale and the flow from the veins, if cut, is slower than in the resting gland, indicating that a vasoconstriction has occurred.

Atrophy of Gland—If the chorda typmani is cut, after a certain time the submaxillary gland begins to secrete slowly. The secretion continues uninterruptedly for several weeks and eventually the gland undergoes atrophy. Secretion of the chorda on one side is followed by a continuous secretion from the glands on both sides.

Cause of Continuous Secretion—This continuous secretion is due to a continuous excitation of the local nervous mechanism in the gland. Normally, the activity of the sympathetic cells or of the secreting cells is kept in check by inhibitory fibers. After section of the chorda the action of these fibers fails and the secretion continues until the glandular tissue undergoes atrophy.

Reflex Stimulation

Under normal conditions the flow of saliva from the salivary glands is the result of a reflex stimulation of the secretory nerves. The sensory fibers concerned in this reflex must be chiefly fibers of the glossopharyngeal and lingual nerves supplying the mouth and tongue. Chemical or mechanical stimuli applied to the tongue or mucous membranes of the mouth will produce a flow of saliva.

Prevention of Reflex—It is found that section of the chorda prevents the reflex despite the fact that the sympathetic fibers are still intact. The three salivary glands respond normally to different stimuli. The parotid and the submaxillary may react quite differently.

Variety of Stimuli—The submaxillary responds readily to a great number of stimuli: (1) the sight of food, (2) chewing of meats, (3) acids. The parotid reacts only when dry food, such as dry powdered meat or bread is placed in the mouth. Dryness in this case appears to be the necessary stimulus.

Response of Medullary Center—The salivary secretion center, in the medulla oblongata, in the formatio reticularis, lateral to the facial nucleus, may be called into activity by the stimulation of the sensory fibers of the sciatic, splanchnic, and vagus nerves. The thought of food and the nausea preceding vomiting may be accompanied by a flow of saliva. The medulla center may be inhibited as well as stimulated. Fear, embarrassment, or anxiety will produce a parched throat.

Adapted from Psychosomatics in Dentistry, *New York Journal of Dentistry* **21**:346-347 (October) 1951.

1

Clinical and Laborato

An Extra Strong Zinc Oxide-Eugenol Paste

Jack Tresser, D.D.S., Valhalla, N.Y.

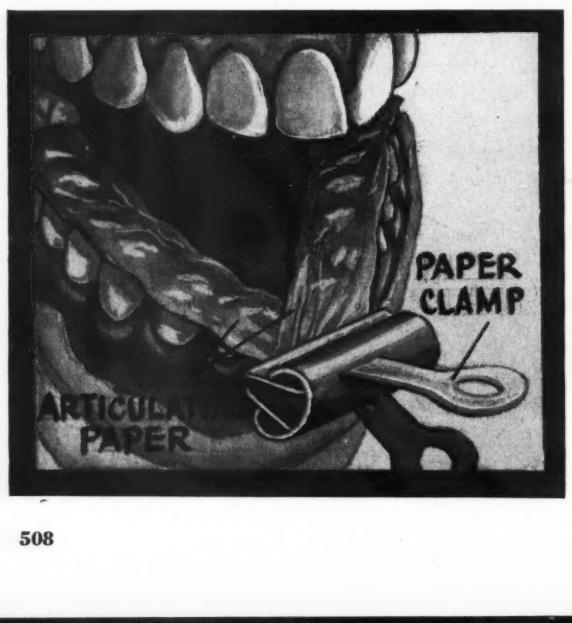
1. Mix a thick paste of zinc oxide-eugenol and squeeze this mass between two paper towels using pliers if necessary to express the excess eugenol. Then wrap the mass in a piece of rubber dam and mold it between the fingers to restore to workable consistency.

2

An Aid in Pouring Lower Models

Joseph A. Hopkins, D.D.S., Rockford, Illinois

2. Place a piece of soft pink wallpaper cleaner in the lingual area of a lower tray after taking an impression. Stone may then be vibrated into the impression without fear of the model becoming locked by stone in the lingual area. If the cleaner is kept in a tightly covered container it is always ready for use and each piece may be used several times.



3

An Aid in Balancing Dentures

Frank Popper, D.D.S., Johannesburg, S.A.

3. Balancing occlusion is facilitated when articulating paper is employed on the right and left side simultaneously. To accomplish this use a small paper clamp which holds two pieces of articulating paper at the angle of the denture. A trace of vaseline rubbed on the teeth with cotton will give sharper marks.

READERS *are Urged to Collect* $10.00

For every practical clinical or laboratory suggestion that is usable, DENTAL DIGEST will pay $10.00 on publication.

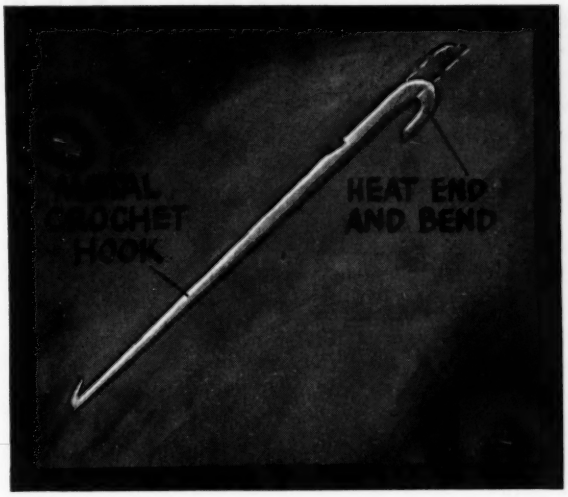
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

A Crown Remover

Fred V. Williams, D.D.S., Olathe, Kansas

4. Heat the handle end of a large crochet hook in the Bunsen burner. When it is red hot bend with a suitable tool into a U shape. To remove a crown place the sharp end of the instrument under the crown margin and tap the bent end of the crochet hook with a mallet to break the cement bond.

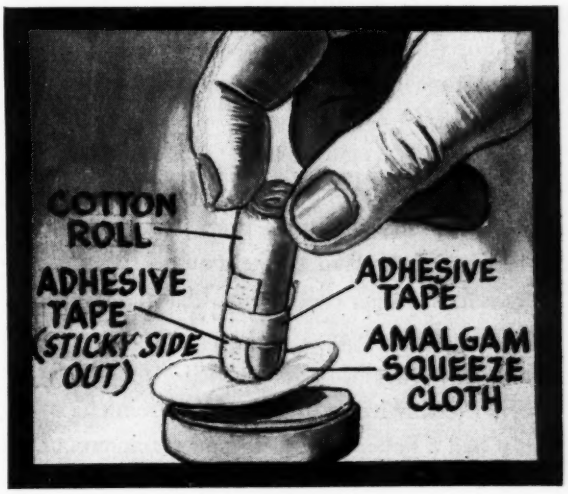


4

A Pick-up for Squeeze Cloths and Surgical Gauze

Jack W. Seidenberg, Lt. (jg) DCR USNR, Oceanside, Cal.

5. A simple pick-up for amalgam squeeze cloths and gauze packs may be easily made using a cotton roll and two strips of adhesive tape. One adhesive strip is placed, sticky side out, over a flat end of the cotton roll. The other strip is then wrapped around the cotton roll over the first strip, securing it in position.

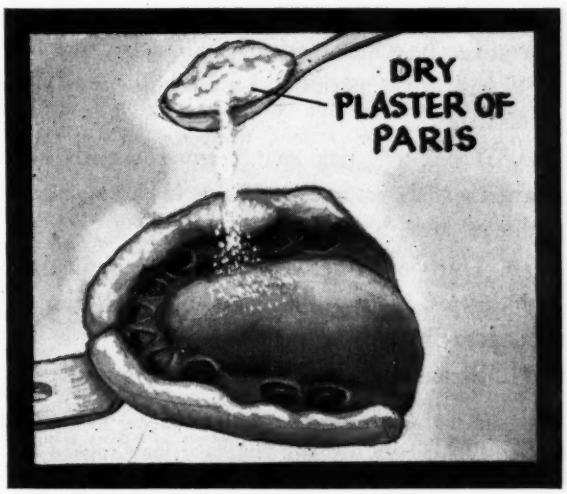


5

Better Partial Denture Models

Joseph M. Poco, D.D.S., Livermore, Cal.

6. Upon removal of most alginate and hydrocolloid impressions a film of saliva sometimes resists removal even under vigorous rinsing. Sprinkle a thin layer of DRY plaster over the entire area of the impression, let stand a few seconds, and then rinse under running water until all traces of the plaster are removed, particularly in the tooth sockets. The impression will now be free of all mucin material that was present and the model may be poured according to the manufacturer's directions.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 522 for a convenient form to use.

Send your ideas to: Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

The EDITOR'S Page

FROM FUNDS made available by the National Cancer Institute 3,587 students in 13 dental colleges of the United States were examined on their knowledge of cancer.[1] The reported results were not too encouraging:

1. Ten per cent of the seniors held that one should wait for the temperature to return to normal or until localization had occurred before treating a malignant process.

2. Thirty-two per cent did not comprehend the probable significance of blue-black pigmentation in a rapidly growing skin neoplasm, and 20 per cent did not realize that surgery was the only therapeutic method offering any hope for cure of these lesions if proved to be melanoma.

3. Forty-five per cent demonstrated at least partial ignorance of the lymphatic drainage of intraoral structures by selecting illogical locations for metastases of carcinoma of the tongue.

4. Seventeen per cent thought that hypersalivation was the most common presenting symptom of carcinoma of the floor of the mouth.

5. Forty-two per cent thought that the immediate action of roentgen rays on tissue was the coagulation of protoplasm.

6. Fifteen per cent thought that carcinoma of the breast had a better prognosis than carcinoma of the lip.

7. Six per cent believed that ultraviolet or infrared rays would cure neoplasms.

8. Sixteen per cent did not recognize osteogenic sarcoma to be a metastasizing malignancy and half of these thought peripheral giant cell tumors did metastasize.

9. Twenty-five per cent seemed not to have heard about the early experiments in carcinogenesis with coal tar.

10. Thirty-eight per cent confused a clinical description of acute leukemia with diphtheria and other less probable conditions.

11. Sixteen per cent recommended, for a patient stated to be suffering from leukemia, a dental procedure likely to precipitate acute hemorrhage.

12. Thirty per cent believed that basal cell carcinoma metastasizes more widely than squamous cell carcinoma.

13. Forty-six per cent were ill informed of the possible carcinogenic effects of common occupational and medicinal factors such as arsenic, chromates, roentgen rays, and sunlight.

14. Eleven per cent thought that the primary reason teeth are extracted prior to radiation therapy is that teeth deflect the roentgen rays.

15. Forty-one per cent believed that when adamantinomas are inadequately removed they recur as either basal cell carcinoma, squamous cell carcinoma, or as lymphoid or fibrous proliferations.

16. Fifteen per cent thought that either adamantinomas or osteogenic sarcoma were more radiosensitive than specified soft tissue lesions.

In terms of encouragement several items were marked with overwhelming accuracy according to the report:

1. Ninety-eight per cent knew that positive diagnosis for malignancy was based primarily on biopsy.

2. Ninety-seven per cent were informed of what is known about the precancerous nature of leucoplakia.

3. Ninety-six per cent were acquainted with the lymph drainage of the lips.

4. Ninety-five per cent were aware of the need to reduce mechanical irritation of oral structures because of the possible role of irritation in the etiology of cancer.

A similar kind of examination conducted among 9,358 students in 32 medical schools prompted the *Journal of the American Medical Association* to comment:[2] "The report reveals that many students graduating today lack important knowledge concerning the diagnosis and treatment of cancer."

If the Number Two public health enemy is to be conquered, students and practitioners of dentistry and medicine must avail themselves of more of the present-day knowledge of malignant disease.

[1]Bierman, Howard R.; McClelland, James N.; Hazlet, John W.; and Galloway, David W.: Test for Dental Students in Subject Matter of Cancer, Oral Surg., Oral Med., Oral Pathol. **4**:1054-1055 (August) 1951.
[2]Cancer Teaching in Medical Schools, Editorials and Comments, JAMA **147**:261 (Sept. 15) 1951.

Alopecia

Clinically, alopecia is recognized as being (1) transient, (2) total, (3) universal, or (4) persistent. The incidence of alopecia is about the same in both sexes. There is no apparent relation to the color of the hair.

There is some difference in the position of the primary patch between the sexes. In males it is 60 per cent occipital and 25 per cent frontovertical. In females it is 27 per cent occipital and 56 per cent frontovertical.

A previous history of the disease is found in approximately 28 per cent of the cases. A positive family history is found in about 19 per cent of the cases. However, it is doubtful that this indicates a familial tendency.

The commonest precipitating cause is found to be mental shock or acute anxiety. A large number of cases are preceded by some form of mental stress. Focal sepsis is thought to play little part in the causation.

The etiology is unknown but it has been suggested that alopecia could be either a disease of adaptation or possibly a virus infection. Prognosis is difficult in the early stage, but it appears that most patients recover. Later in the course of the disease a generalized falling of the hair with complete loss of eyebrows and whitening or loss of eyelashes is grave. When this generalized loss is rapid, recovery is rare. Patients with alopecia totalis without loss of body hair may recover even after a year or more. Alopecia universalis appears to be almost always permanent.

Anderson, I.: Alopecia Areata: The Clinical Study, Brit. M. J. **2**:1250-1252 (*December* 2) 1950.

Amebiasis—Management Present-Day

In the United States it appears from many surveys that 5 to 10 per cent of the population is infected with Endamoeba histolytica. The disease is universal in its distribution over the globe.

MEDICINE *and the Biologic Sciences*

The chronic form of the disease is of particular concern. It causes ill health, lowered vitality, and decreased resistance to other infections. Patients suffering from chronic amebiasis seldom will visit the doctor. Usually, the practitioner does not have in mind the possible presence of the disease when these persons do visit him.

These same persons can and do transmit the disease. The infection is frequently water borne and is due to poor sanitation, but it is commonly transmitted by food, food handlers, and insects. Therefore, important steps in the eradication of the disease include (1) control of water supplies, (2) proper food handling, and (3) elimination of insects that are transmitters of the causative agents.

The trophozoites may be destroyed by the gastric secretions. However, from an epidemiologic standpoint the cysts of E. histolytica are much more important. It has been found that a patient who has acute symptoms may pass an average of 15,000,000 daily. These cysts may remain viable for days.

Most persons who are hosts to E. histolytica seem to have some symptoms that may be ascribed to its presence. There is no such thing as a healthy carrier of amebiasis. General physical examination may not reveal anything of significance. Certain complications, however, such as hepatic abscess or pulmonary infection, may direct attention to the source of the trouble.

The absolute diagnosis of amebiasis is dependent on the finding of E. histolytica in the feces or other body discharges. It is important to adopt a standard procedure for preparing these patients for the examinations. And it is best to collect the specimen near the laboratory; also it is best to have toilet facilities at hand.

The patient should be advised to have a free bowel movement about twelve hours preceding collection of the stool to be examined. If he does not have diarrhea he is directed to take from one half to one ounce of magnesium sulfate on the morning of the examination and then to eat his usual breakfast. The stools should be examined immediately, or at least within thirty minutes after passage, for motile vegetative forms of the ameba and also for cysts. In some large laboratories complement fixation tests have come into use. The tests almost always give positive results in the presence of amebic hepatitis or amebic abscess of the liver.

The purpose of treatment is threefold: (1) destruction of amebas in the tissue, (2) destruction of amebas in the lumen of the intestine, and (3) healing of the ulcerative tissues. A number of different drugs have been advocated by different men. The majority use combinations of emetine hydrochloride, carbarsone and diodoquin, or one of the oxyquinoline drugs with a high iodine content. Antibiotics are being tried. Of these, aureomycin seems to offer much.

The keystone of successful treatment appears to be persistent, adequate, and properly timed administration of the proper drugs. The proper combination of the drugs given in rather large amounts over short periods and yet in amounts which are unlikely to produce toxic effects results in cure of most patients with amebiasis. In the average case a suit-

able and successful course of treatment covers twenty-two days.

Bargen, J. Arnold: Present Day Management of Amebiasis, J.A.M.A. **145**:785-789 (*March* 17) 1951.

Premenstrual Tension

The symptoms of premenstrual tension may be divided into three groups: (1) Those referable to the central nervous system, including nervousness, emotional instability, insomnia, headache, psychic depression, physical asthenia, neuralgias, and fainting, (2) tenderness of the abdomen and rapid increase in weight due to fluid retention, (3) mastopathy, including the changes from simple painful distention of the breasts to formation of nodular and glandular cysts.

The syndrome usually appears from seven to fourteen days previous to the onset of menstruation. It vanishes the first or second day of the menstrual flow.

In one group of thirty patients presenting some of the symptoms noted in premenstrual tension, oral doses of vitamin A were given. Doses of 200,000 units (in two divided doses after lunch and after dinner) were given. Treatment was begun on the fifteenth day of the cycle and was continued through the first day of menstruation. It was resumed fifteen days later, for a total period of from two to six months.

Significant improvement was noted in the majority of patients as shown (1) by the disappearance of mastodynia, (2) disappearance of mammary nodules, (3) decrease of abdominal pain, (4) disappearance of edema and great improvement in nervous disorders. This improvement continued after cessation of the therapy. The disturbing symptoms did not reappear during the year following the beginning of treatment. When placebos were given the symptoms remained unchanged.

Argonz, A. J., and Abinzano, C.: Premenstrual Tension Treated with Vitamin A, J. Clin. Endocrinol. **10**: 1570-1579 (*December*) 1950.

Acute Otitis Media

Until recently the treatment of acute otitis media was largely surgical. Present trends in the treatment are of a purely medical nature.

There is a widespread attitude that all cases of acute otitis media, as well as most cases of earache, should be treated by the use of antibiotics and chemotherapeutic agents. The membrane tympani should be allowed to rupture spontaneously if it will, and rarely if ever should it be incised. The resulting hearing impairment can be cured by the use of radium in the naso-pharynx.

Many authorities disagree with these trends. The diagnosis of acute suppurative otitis media presupposes the presence of pus in the middle ear. The classical symptoms and signs are: (1) earache, (2) fever, (3) leukocytosis, (4) impaired hearing, and (5) a red, bulging drum membrane.

Once the diagnosis has been made, surgical treatment is usually necessary. And it is demanded at once, not after a trial on chemotherapy.

Nonsuppurative acute otitis media should be treated medically. However, the patient should be watched closely for any evidence of pus which may be only a matter of a few hours.

It is wise to incise the drum membrane early when the necessity for incision exists. It often takes as much as three days for the infection to build up enough pressure to erupt the drum membrane. This increases the opportunity for spread of infection to the mastoid. There is no tendency for a child's drum membrane to rupture earlier than an adult's.

When spontaneous perforation of the drum membrane does occur, the drainage is frequently inadequate. The later the spontaneous perforation, the less adequate the drainage. Mastoiditis is less likely to develop in persons who have the benefit of a myringotomy early.

The pain of an acute otitis media is excruciating. Simple surgery relieves this pain. This alone warrants the procedure.

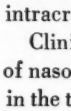
There is little danger of impaired hearing if care is exercised and sterile conditions maintained.

Medical treatment after surgery has its place. It serves to decrease the morbidity and to prevent complications which might prove fatal.

One of the dangers of using medical treatment alone is that it will impair the hearing. The body reacts to thicken the mucosa and to produce scar tissue after the absorption of pus. Often a greatly attenuated smoldering infection remains which may result in the insidious development of an intracranial complication.

Clinicians are divided on the value of nasopharyngeal radium applicators in the treatment of middle ear disease. This form of treatment has been abused. Its use in otology is limited and positive indications for its use are rare. Little can be accomplished from its use in adults. In children, a thorough and carefully performed adenoidectomy will accomplish in most instances the result which radium is expected to produce.

Maxwell, J. H.: The Treatment of Acute Otitis Media, J. Michigan M. Soc. **49**:668-671 (*June*) 1950.



Cosmetic Dermatitis

Despite the widespread use of cosmetics, dermatitis caused by allergy to such products is not common. Dermatologists are seeing fewer cases today, probably because of improved methods of manufacture and clinical research before the products are released to the public.

Most cases of cosmetic dermatitis today are caused by new products which often contain skin sensitizers. One should be cautious in accepting the patient's statement that an eruption is caused by cosmetics. Often patients will regard rosacea, toxic erythemas, seborrheic dermatitis, and staphylococcic folliculitis as cosmetic dermatitis.

Both men and women are subject to

the condition. Products which cause sensitization include: (1) hair dyes, (2) hair tonics, (3) waving solutions, (4) lipstick, (5) nail polish, (6) base coats, (7) freckle creams, (8) hair lacquer, and (9) shaving lotions. Some creams may cause allergies if they contain essential oils, estrogens, or wetting agents.

The causes of cosmetic dermatitis are threefold: (1) The patient may not follow the directions of the manufacturer. The cosmetic is used on an irritated skin or is applied too frequently or vigorously. Sometimes the area on which the cosmetic is applied is exposed to excessive sunlight.

(2) The cosmetic may have deteriorated due to age, action of light, or poor storage facilities. The cosmetic may be unstable due to absence of stabilizers or emulsifiers, or it may contain potential sensitizers. Cross-sensitization may be present to penicillin, sulfonamides, or local anesthetics. The cosmetic may undergo chemical changes resulting in the production of secondary irritating substances.

(3) The manufacturer may release a product without previous clinical research over a long period of time. He may use substitutes for safer products because of cheaper price or unavailability.

The popularity of aerosol sprays, containing deodorants, cologne, or leg make-up may produce a large number of cases of dermatitis in sensitive persons, due to the fact that the preparations contain wetting agents which permit greater penetration.

The recognition of skin disorders due to cosmetic sensitization may be very simple or very difficult. The obvious cases are those caused, for example, by cuticle removers or depilatories. Difficult cases are those in which the eruption is more or less nonspecific. Sun or windburn, nervous upsets, dietary indiscretion, occupational and dosimetric contactants must be considered in the differential diagnosis. In many cases the eruption usually follows within twenty-four to forty-eight hours after use of a new cosmetic.

In diagnosis the eruption must first appear at the site of the application of the cosmetic (except in nail polish dermatitis). The eruption should clear up within a week after discontinuing the suspected cosmetic.

The eruptions usually clear up within a few days to one week except in the hair dye cases. Here there is a great deal of inflammatory reaction, toxic absorption, and a disturbance of the blood and liver function,.

Therapy should consist of common sense plus the mildest of treatment, depending on the extent of the affection. After discontinuing all cosmetics temporarily boric acid or aluminum acetate wet packs should be used in the edematous cases. In the erythematous cases a zinc oxide-starch lotion may be applied. Ointments should be avoided in the acute eruptions. A hypo-allerginic or a specially formulated preparation should be prescribed as a substitute for the suspected product.

Tobias, Norman: Management and Treatment of Cosmetic Dermatitis, Postgrad. Med. **9**:116-117 (*February*) 1951.

Section of the Trigeminal Nerve

One of the chief objections to section of the fifth cranial nerve is the resulting loss of sensation in the trigeminal area. In some instances the operation results in a painful paresthesia in the anesthetic area.

An operation has been devised whereby the descending tract of the trigeminal nerve is sectioned in the medulla oblongata. A disassociated anesthesia is obtained.

In the majority of cases the trigeminal nerve is sectioned at a level corresponding to the border between the middle and the inferior third of the olivary eminence or at a level corresponding to the lower end of the fourth ventricle. This modification has virtually eliminated the danger of laryngeal palsy and disturbances of gait and station.

This procedure cannot be used as a routine measure because trigeminal tractotomy is potentially more dangerous than section of the sensory fibers by the subtemporal approach and because it is followed by a relatively great number of recurrences.

It is indicated in persons in whom preservation of the tactile sensation of the face is desirable and in whom, in case of recurrence, a secondary operation can be performed without risk to life. Tractotomy is thus indicated in young and middle-aged persons in good general health and with moderate neuralgia, especially if the neuralgia is localized to the ophthalmic and maxillary divisions.

Guidetti, B.: Tractotomy for Relief of Trigeminal Neuralgia, J. Neurosurg. **7**:499-509 (*November*) 1950.

Needle Biopsy of the Liver

Needle biopsy of the liver is a relatively safe and easily performed diagnostic procedure.

The use of needle biopsy is well suited to the liver because the functional unit, the lobule, is only a few square millimeters in diameter. Parts of several units are usually procured with each biopsy. Most diseases of the liver are diffuse in nature and, therefore, are accurately represented.

The diagnosis of (1) portal cirrhosis, (2) viral hepatitis, (3) nonspecific hepatitis, and (4) malignant neoplasm is relatively easy when biopsy is employed. Records reveal that biopsy findings agree with exploratory operative and autopsy findings in the vast majority of cases.

The fundamental pathologic pattern of a surprisingly high percentage of patchy lesions of the liver, such as metastatic nodules, is shown by biopsy. Needle biopsy is of decided value in the diagnosis and study of chronic viral hepatitis. Serial biopsies allow progressive study of the benefit of therapy in chronic liver disease, particularly in fatty degenerative and cirrhosis.

In some instances information of prognostic value may be obtained. Liver function tests and needle biopsies agree in general. Occasionally biopsy reveals the precise diagnosis when function tests fail to show any abnormality.

Stone, C. T. Jr., and Grater, W. C.: Needle Biopsy of Liver: Critical Appraisal, Texas State J. Med. **46**:818-826 (*November*) 1950.

Contra-Angles

More on Dental Infection

Virtually every day in practice a dentist is required to make an evaluation of the subject of possible dental infection in connection with a systemic disease. Yesterday was a typical day for me. One patient in his early forties is developing lateral sclerosis. He has one pulpless tooth without x-ray evidence of disease. Should the tooth be removed? Another man in his late fifties called to say that he had a white blood cell count of 15,000. No generalized infection had been demonstrated. Might he have a dental infection? A woman with extensive inflammation of her supporting soft tissues is taking cortisone for rheumatoid arthritis. While she is taking this adrenal cortical preparation the inflammation of her soft tissues is improved. Does that mean that her "pyorrhea" is being cured? What is the relationship between her periodontal inflammation and the inflammation in her finger joints?

These are all typical questions that arise every day in dental practice. How do we meet them? One sensible approach was expressed by an internationally eminent physician of the Mayo Clinic, the Nobel prize winner, Philip Hench, and reported by Doctor Edward C. Stafne before the Midwest Seminar of Dental Medicine. This wise physician, Doctor Hench, said: "As a clinical investigator I

must conclude that the causes of atrophic arthritis are still unknown, and that the evidence for infection, although very impressive, is incomplete. Invoking the privileges of a clinical investigator I cannot and need not decide for or against the microbic theory with any finality. As a practicing physician, however, I cannot wait until the evidence is complete. The exigencies of practice force one to express an opinion one way or another . . . Therefore, as a practicing clinician I have committed myself to the microbic theory."

Honest dentists and physicians have honest differences of opinion regarding the subject of dental infection and systemic disease. Three recent reviews are reported herewith:

From the British Medical Journal

On July 9 a symposium on "Odontology" was held at 1, Wimpole Street, London, W.I. This was the 25th of the Festival Scientific Meetings sponsored jointly by the British Medical Association and the Royal Society of Medicine. Sir William Kelsey Fry was in the chair.

Doctor A. H. Douthwaite reviewed the change of outlook of the physician on dental sepsis over the last twenty-five years. A quarter of a century ago sciatica, rheumatoid arthritis, fibrositis, and similar diseases, the etiology of which was not clearly understood, were said to be due to focal sepsis in the jaws, sinuses, or alimentary tract. He thought that today there was a saner outlook on the matter.

Medical Sequelae of Dental Sepsis—Dental sepsis could spread in two ways, either locally or distantly via the blood stream. Among the lesions which could be considered attributable to local spread from open dental sepsis were acute and chronic glossitis, recurrent sore throat, acute parotitis in debilitated patients, enlarged lymphatic glands of the cervical chain, and chronic gastritis. In considering the lesions which might follow hematogenous spread from dental sepsis, Doctor Douthwaite said that the cardiovascular system was the most vulnerable. Extraction of teeth could give rise to a transient bacteremia, and in patients with congenital or chronic cardiac lesions a bacterial endocarditis might ensue. Chronic hypochromic anemia could be caused by closed dental sepsis, which might be cured by removal of the offending teeth. Sudden thrombophlebitis in otherwise healthy veins could be attributed to focal sepsis. A purpura manifested in the lower limbs might follow dental extraction; the platelet count was not altered and fragility tests showed no abnormality. The condition, which was possibly due to a transient toxemia, cleared spontaneously. It was improbable that the digestive and genito-urinary systems were affected by hematogenous spread from infected foci in the jaws. In twenty-five years the speaker had noted five cases of pyrexia of unknown origin which he considered were due to dental sepsis.

In discussing the effect of focal sepsis in arthritic and rheumatic conditions, Doctor Douthwaite could find no sound scientific background for any relationship of the one to the

other. The discovery of sulphonamides and antibiotics had been the final blow to focal sepsis in the connection, as the organisms said to be responsible were sensitive to the antibiotics, yet their administration gave no relief.

Sinusitis of Dental Origin—Mr. C. Gill Cary discussed the significance of dental sepsis to the E.N.T. surgeon under three headings: (1) Dental sepsis and disease of the pharynx and larynx; (2) sinusitis of dental origin; and (3) facial pain of dental origin.

Mass dental extractions as a preoperative necessity were now a procedure of a bygone era. Nowadays only the removal of obvious dental sepsis was indicated, and the introduction of chemotherapy had reduced the risk of infection by oral organisms, as complications to pharyngeal and laryngeal operations, to a negligible factor.

Discussing sinusitis of dental origin, the speaker reported that, in a recent survey of 500 cases of maxillary sinusitis, 27 cases had been directly attributable to dental sepsis or to a dental operation. He remarked upon the chronicity of the sinusitis, the occasional difficulty in establishing the etiology, and the excellent response to simple treatment if an early diagnosis was made. With regard to facial pain, the speaker discussed the differential diagnosis between dental pain and pain of a similar distribution secondary to disease of the nose and throat.

Eyes and Teeth—Mr. J. H. Doggart, speaking as an ophthalmologist, began with a brief reminder of the strong views held by ophthalmologists in the past who believed dental sepsis to be responsible for many ophthalmological ailments including iridocyclitis, choroidal sclerosis, and retrobulbar neuritis. The outlook today was, however, much more reasonable. Direct spread of infection from the teeth and jaws to the eyes could occur, and he cited cases as examples. Focal sepsis in the jaws was not, in his opinion, often responsible for conjunctivitis or other inflammatory processes of the eyes.

Plurifactor Dermatitis—Doctor W. J. O'Donovan discussed changes in the basic concepts of dermatology. Most practicing dermatologists had been brought up to regard rashes, eruptions, infiltrations, and ulcers of the skin as "self-existing identities." Great importance was attached to their recognition, but little time was given to the study of their causes. Today when reactions were observed to occur with fair consistency there was a growing tendency to describe these recognized types of disease as "pattern reactions." The idea of a single cause had long been in favor among medical men. It was well developed when Osler first clarified the clinical and pathological picture of ulcerative endocarditis. Nothing had been more striking than the rapid recognition in Spanish medicine that the rashes on the skin and mucous membranes of sailors from the Indies were to be attributed solely to a venereal sore that was the first site or focus of a later generalized infection.

Surgeons long ago had taught that amyloid disease of liver and spleen had its origin in an old, uncured osteomyelitis with a sequestrum, so that the notion that acute localized infections, especially in the nose and throat, might give rise to disease in other regions had readily and widely and for long been accepted. It had been accepted that bacteria causing focal infection might be discharged and conveyed by mechanical means so as to cause extension of the disease by reinoculation; that bacteria might overcome local resistance and be conveyed to distant parts of the body by way of the lymphatics and the blood; or, thirdly, that the microorganisms might remain enclosed at the seat of focal infection from which their toxins were slowly and continuously absorbed. This idea was earnestly canvassed in the dermatological schools. Scarlet fever was reasonably attributed to a primary focus of infection in the tonsils. A most characteristic skin eruption, erythema multiforme, might be taken as a *locus classicus* of the use of this working hypothesis. The disease was attributed in standard textbooks of about 1927 to seven

causes, of which one was "focal sepsis —e.g., of the teeth, tonsils, sinuses, etc." Today, if the more modern editions of the same textbooks were consulted it would be found that focal sepsis had been quietly dropped as a cause of erythema multiforme. Another disease which was no longer associated with a primary focus of infection, as once it had been, was lupus erythematosus.

Today focal sepsis was not included in the indexes of the latest textbooks. What was the explanation of this? Doctor O'Donovan suggested that it would be found in a form of words more common in the United States than here; namely, "plurifactor dermatitis." A cause of a skin trouble did not produce manifest disease unless there was a previous predisposition which might be due to a hereditary tendency of genetic origin or to sensitization at some time. The exciting cause might be a hurt to which the skin would have been unresponsive if the patient's reaction balance had not been upset by mental tension, shock, or a transient virus illness or a common cold. Many patients had focal sepsis, but few exhibited recognizable efflorescences.

Oral Hygiene and Anesthesia—The discussion which followed was opened by Doctor E. W. Fish, who said he was pleased to hear the unanimity of the speakers on the subject of focal sepsis. He reminded the meeting of the danger of dental extractions in heart disease, citing examples. He laid much emphasis on the point that eradication of apical infections did not necessarily render a mouth free from sepsis. The gingival and paradontal tissues could harbor sepsis, which on mastication might result in a transient toxemia or bacteremia. He made a plea to the dental surgeons that when asked to eradicate focal sepsis they should make quite sure that no infection remained in the gingival and paradontal tissues.

Professor M. A. Rushton agreed with the assessment of dental sepsis which had been given. Two aspects of current practice, however, did not accord with present knowledge. There was inadequate provision in hospitals for the oral hygiene of patients

In your ORAL HYGIENE this month

The Dentist and His Personality

You've probably had your share of *physical* check-ups—if only those required for insurance or military service . . . But have you *ever* had a *personality* check-up?

Probably not. Salesmen and other business people whose jobs require them to deal with the public are often tested, rated, and trained to develop desirable personality traits—but professional men, being self-employed, rarely have this opportunity.

If you'd like to test yourself, now's the time to do it. Three articles in this month's Oral Hygiene will give you a good start.

★ ★ ★

"The Dentist and His Personality," by Harold Gluck, Ph.D., offers a Personality Chart and a method of rating and scoring such important personality factors as personal appearance, cleanliness, speech, and accommodation to people and situations.

★ ★ ★

Then there's the admonitory advice of Doctors Goldstein and Levitas to "Watch Your Own Hygiene" and a discussion of the many ways in which a dentist may unknowingly offend his patients through carelessness or thoughtlessness.

★ ★ ★

Finally, for a check on the broader concept of personality, there's the article by Charles Furcolowe, "How Are Your Patient Relations?" He, too, presents a list that might well be used to check against your methods and habits.

★ ★ ★

If such searching self-analysis depresses you, turn, for relief, to the article about Doctor Keene and the Chinese student he is educating, or to the story of a spear-fishing dentist on the west coast who finds relaxation in donning foot-fins and face mask and diving into the ocean.

★ ★ ★

Or turn to "Ideas For Income Tax Savings." After all, March is just around the corner, and what you *do* now may affect what you *pay* then—especially if you're buying new equipment or contributing to the Community Chest or other charities.

★ ★ ★

Right in line with the soul-searching we've been talking about, is the department, "So You Know Something About Dentistry!" This department is a regular monthly quiz to test a dentist's technical knowledge . . . But perhaps, by this time, you've had enough tests and would rather just browse through the other departments and features in November Oral Hygiene.

CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 508 *and* 509)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor

DENTAL DIGEST
708 Church Street
Evanston, Illinois

From: _____

_____

Subject: _____

Explanation of Procedure:

Sketch:

Suggestions submitted cannot be acknowledged or returned.

$10 will be paid on publication for each suggestion that is used.

who were to receive general anesthetics. And, since the frequency and extent of bacteremia were closely related to the number of teeth extracted, the removal of very many teeth at one time from out-patients, as was still done in many dental practices, appeared most undesirable.

Fishbein in Postgraduate Medicine

The *Journal of the American Dental Association* has devoted its entire June issue to a sort of farewell number for what used to be called the theory of focal infection. Briefly the theory has been that infected teeth in themselves may be a major cause of arthritis, diseases of the heart and of the kidney, inflammations and infections of the eye and of the skin. A vast amount of research has seemed to prove without a doubt that bacteria, originating in abscesses about the roots of the teeth, may be carried by the blood to various other portions of the body and there set up secondary infections. One doubts whether or not anything that is said in the farewell number of the *Journal of the American Dental Association* can eliminate entirely this concept. Nevertheless one may conclude that the extraction of infected teeth will not alleviate infections already established elsewhere in the body. Moreover, there would seem to be some indication that extraction of teeth may be extremely harmful in cases of rheumatic fever unless special precautions are taken by liberal use of antibiotics to prevent secondary infections, such as subacute bacterial endocarditis.

Summarizing the opinions which come from a group of physicians and dental scientists working under the direction of Doctor Kenneth A. Easlick of the University of Michigan School of Dentistry, rheumatoid arthritis would seem to be quite certainly related to constitutional conditions as are other collagen diseases. The favorable response to ACTH and cortisone and the temporary relief given patients who are pregnant or who develop jaundice would seem to establish the fact that rheumatoid arthritis has its origin in biochemical phenomena and is not a disease of

bacterial origin. Similar conclusions have been reached for such other diseases as osteoarthritis, traumatic arthritis, gout, psychogenic arthritis, bursitis, fibrositis, and other collagen diseases.

Certainly there is evidence that infections in the gastrointestinal tract are implicated in secondary infections of the kidney. Except for the experiments of E. C. Rosenow, little evidence is available that bacteria coming from infected teeth tend to localize in the kidney. Many studies have seemed to show relationship of infections at the roots of the teeth to iritis and one is inclined to believe that such an etiology could occur yet one may also question whether removal of the teeth would tend to bring about relief of iritis.

The primary purpose of the series of articles in the dental publication would seem to be an urge to save teeth whenever possible rather than to extract them because of possible relationship of infections near the teeth to infections elsewhere in the body. The entire consideration may be thus summarized: "Before a decision is reached to extract teeth as a possible treatment for a condition which has not yielded to other treatments, it should be recalled that if the nutrition is important to health and well-being, preservation of teeth is important too.

"Extraction of teeth can destroy the pleasure derived from eating foods and lead to the selection of foods of lower nutritive value. Before dentists extract teeth at the request of an internist who is 'just trying to do something,' it is well . . . (to determine if there is) sufficient evidence to warrant the extraction."

From the Midwest Seminar of Dental Medicine

All dental infections, regardless of how unimportant they might appear, are potentially dangerous to the patient and should be treated or eliminated immediately.

This observation was made by 67 dentists, physicians, and research investigators from 11 states who attended the Fourth Annual Midwest Seminar of Dental Medicine at Baileys

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This observation was made by 67 dentists, physicians, and research investigators from 11 states who attended the Fourth Annual Midwest Seminar of Dental Medicine at Baileys

Harbor, Wisconsin, September 16-20.

The purpose of the seminar was to exchange ideas and opinions on one of the most important problems in the health sciences—the relationship of the teeth and the supporting dental structures to general health. The faculty for the seminar included Edmund B. Flink, M.D., Ph.D., associate professor of internal medicine at the University of Minnesota; Edgar S. Gordon, M.D., Ph.D., associate professor of biochemistry and clinical medicine at the University of Wisconsin; and Harry Sicher, M.D., professor of anatomy and histology at Loyola University, Chicago.

Participating scientists agreed that dental infections harbored by persons who have heart valve damage, diabetes, acute kidney disease and acute eye inflammation are particularly dangerous. Elimination of infection in these conditions requires special care and preparation of the patient.

They emphasized that it would be folly to allow infection to remain in the jaws since it not only eventually results in the destruction of tissue with the loss of teeth, but because there also is the possibility of such conditions leading to disease in other organs of the body.

Treatment or elimination of dental infection, they contend, does not necessarily mean the removal of teeth. Elimination of an infection also might be accomplished by such means as removing dental decay and restoring the lost structure, by removing the pulp of a tooth, by removing diseased tissue, and by treating periodontal diseases.

Doctor Gordon said that the value of cortisone therapy in treating mouth infections is unknown at the present time, but probably of little significance. There is reason to believe that it even may be dangerous under certain circumstances. For example, removal of teeth when the patient is undergoing cortisone treatment may impair the healing of the extraction wounds. In addition, there is suggestive but not widely confirmed evidence that cortisone and ACTH therapy may interfere with the normal defense against infection of all types.

It is necessary, therefore, that the physician and the dentist should consult frequently regarding the total care of the patient who is receiving cortisone and ACTH treatment. The patient, himself, has a responsibility of informing the dentist that he is receiving this specific therapy.

The sulfonamides, the antibiotics, and now the adrenal cortex preparations have taken the sting out of many disease processes. Some of these agents have killed the microbic invaders; others have changed the reaction of the host and have masked the underlying infection. The cardinal principle of therapy, however, remains unchanged: where infection exists, it must be eliminated.

—E. J. R.

Fixed and Removable Bridgework

Summary

Removable and fixed prosthetic appliances were constructed for each of twenty subjects in order to replace a missing first molar. (In two cases the second bicuspid was also restored.) Masticatory performance tests with soft and tough foods were made before, immediately after, and one and two weeks following the insertion of the appliance. The degree of pulverization before swallowing and the time and chewing strokes required per mouthful were obtained for each subject at each period.

The insertion of either fixed or removable appliances caused a statistically significant increase in masticatory performance with both hard and soft foods. The two appliances were about equivalent in their effect. Masticatory performance was generally higher after appliances were in place for a two-week period, indicating that patients learned to use both fixed and removable appliances more efficiently within this time. The duration of this learning period has not been determined.

Subjects with a diminished masticatory capacity swallowed larger particles of food than did those with a normal or superior masticatory performance. Upon the insertion of fixed and removable appliances, most patients immediately used fewer strokes to pulverize their food finer at the swallowing point. After two weeks of usage, the patients required seven fewer masticatory strokes and six seconds less time per mouthful and at the same time achieved 16 units greater pulverization than they did previous to the insertion of the partial appliances.

From *Journal of Prosthetic Dentistry* **1**:577 (September) 1951.

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